

COMPUTERWORLD

High Windows 95 entry fee won't deter pioneering shops

By Laura DiDio

No pain, no gain is a fact of life for any user contemplating a major operating system upgrade. And Windows 95 will be no exception.

The new Microsoft Corp. operating system heads into its third and final beta release next month sporting a slew of advanced capabilities. These include the Registry structured database, which consolidates and automates management of network components down to individual workstations, and the long-awaited client requester. It will allow seamless integration of file and print services between Windows 95 users and Novell, Inc. NetWare LAN users.

Tools available in Windows 95

System Policy Editor
for local control

Systems Monitor
for remote viewing

Net Watcher
for peripheral management

The caveat, however, is that nothing this good is cheap or easy.

Feedback from users last week indicated that large corporations expect to shell out hundreds of thousands, and perhaps even millions, of dollars for those not-so-little hidden extras such as the Windows 95, page 16



E-mail snows in Cyber Santa

By Gary H. Anthes
NORTHE POLE

'Twas the week before Christmas and all through the 'net, not a PC was idle, not even its mouse.

While Santa's elves toiled last week to put the finishing touches on toys for Christmas, some were at terminals, processing electronic mail from thousands of children worldwide.

In fact, the volume of E-mail arriving here this year Santa, page 105

Storage prices plummet

By Craig Stedman

Like the birds, prices on mainframe disk arrays are heading south for the winter. And large systems shops are getting a warm feeling as a result.

Mainframe storage vendors have found themselves in a price war as they jostle for position in an increasingly crowded market. Users and analysts said pricing pressures on even high-performance arrays have dropped in the \$35-per-megabyte range, about 40% lower than the cost at the beginning of the year.

Cheaper still

Pricing is expected to get even more aggressive in the first half of 1995 as vendors such as EMC Corp., Hitachi Data Systems Corp., and Amdahl Corp. match the re-

Storage, page 105

Newspaper

8E8B83FT888***** 5-DIGIT 48103
#UDI72E300M0990398 0010112592
UNIVERSITY MICROFILMS INT 0017
UNIVERSITY MICROFILMS INT 0011 6 XC
SERIAL PUBLICATIONS
300 N ZEEB RD
MI 48103-1553

Whither dBase?

Borland weighs product sale; up to 600 may be laid off

By William Brundt

The unthinkable has become thinkable for Borland International, Inc.

A pounding by database rivals coupled with another round of expected financial losses has the company pondering whether dBase and/or Paradox has a future in the database market, according to a highly placed source at the company.

While stating that nothing definitive had been determined, Keith Maib, Borland's chief operating officer, conceded "we are not ruling out anything" when asked if Borland would sell off its dBase or Paradox product lines.



COO Keith Maib is weighing options to keep Borland viable

brought in just \$55 million in revenue since it shipped Oct. 2, according to Niecole Roth, an analyst at International Data Corp., a market

Borland, page 16

Cost-cutting strategies

Client/server trimmings

By Julia King and Rosemary Calafato

Adopting client/server technology is a lot like owning a horse: The purchase price is reasonable enough; it is the care and feeding that will break you.

But after a few years of paying through the nose, users are uncovering ways to rein in astronomical service and support costs, which typically eat up a full three quarters of client/server budgets.

Cost-cutting tactics revealed in interviews with several information systems executives include the following:

- Playing hardball: When negotiating client/server software contracts by pushing for up-

Client/server, page 14

CDPD takes a bite out of crime

By Michael Fitzgerald

Drug dealers and journalists will soon find it harder to ply their trades in Groton, Conn., thanks to a wireless data project under way there.

The Groton Police Department is close to rolling out Cellular Digital Packet Data capability to its cruisers, giving officers wireless access to state and national crime databases. This would mean Groton's finest could pull over a car and check its registration without using their radios, which both criminals and journalists can sear.

The project, poised to become the first-ever



Groton police officer Dennis Campagna will have his cruiser outfitted with a pen-based system and CDPD modem

CIO GUIDE

Data access FAST!

NEWS

■ IBM's decision to pull Pentium-based systems off the market temporarily triggers a flood of support for Intel from other vendors. *Page 4*

■ Oracle prepares to announce drag-and-drop utilities for the care and feeding of new low-end databases. *Page 6*

■ Sybase turns to Silicon Graphics for help in adding parallel functions to its System 11 database. *Page 6*

■ IBM offers Windows 95 developers an aggressive program for converting Windows 95 applications to work under OS/2. *Page 12*

■ Migration was a chief concern of Digital users attending the DECUS conference. *Page 12*

■ Some users are finding dumb terminals in client/server environments can save big bucks and help provide more manageable migration. *Page 14*

■ Users look to move forward with their messaging architectures on a modular basis. *Page 16*

■ ESPN, the all-sports cable network, takes a rather circuitous path to its new data center. *Page 20*

■ To speed up availability of its next-generation operating system, Apple may build in support for its huge installed base of 680x0-based Macintosh systems. *Page 24*

■ The Northern California Society for Information Management chapter tries to give city kids a leg up on opportunity. *Page 28*

DESKTOP COMPUTING

■ Windows 3.1 users can easily find their way around Windows 95, according to a study by Usability Sciences. *Page 39*

■ A test-drive shows Symantec's PCAnywhere 2.0 remote-access software has a raft of new features, but setting it up can be challenging. *Page 40*

WORKGROUP COMPUTING

■ Pirex tries to smooth the connection between Novell's NetWare and the Internet. *Page 45*

Distributed client/server computing is creating a greater demand than ever for software that can quickly capture and analyze business information. Yet RDBMSs are poorly designed to meet this need. Fortunately, vendors of EIS, decision-support systems and multidimensional OLAP tools are stepping in to fill the gap. For a buyer's guide and analysis of the latest offerings, see the Guide to Business Intelligence Software. *Page 69* and Marketplace's review of spreadsheet data access and analysis, *Page 94*.

ENTERPRISE NETWORKING

■ The head-to-head battle between Novell's NetWare and Microsoft's Windows NT is taking shape, with each product offering strengths where its competitor may be weak. *Page 49*

LARGE SYSTEMS

■ Capacity planners aren't just counting MIPS these days; response times often take priority. *Page 57*

MANAGEMENT

■ Network managers face a torrent of new challenges and must learn to embrace those challenges and turn them into opportunities. *Page 66*

IN DEPTH

■ A directory of 1994 In Depth articles. *Page 81*

CAREERS

■ Given the breadth of Windows products slated for release, opportunities for Windows trainers are expected to explode. *Page 85*

MARKETPLACE

■ Current spreadsheets satisfy most users needs considering 80% of spreadsheet users employ only 20% of available features. *Page 94*

COMMENTARY

■ Charles Babcock looks at an IS organization that is doing things right. *Page 8*

■ A retrospective look at 1994 brings out the pooh in Paul Gillin. *Page 36*

■ Joe Maglitta visits the computer conference for the stagnate IS executive. *Page 37*

■ Esther Dyson says the Internet may not be that different from a college beer bash. *Page 37*

■ Gary Antee's wish list includes an E-mail system that thinks like he does. *Page 49*

Calendar *Page 67*

Company Index *Page 102*

Editorial/Letters to the editor *Page 26*

Dir. 16 Stock Ticker *Page 103*

How to contact Computerworld *Page 106*

Executive Briefing

Newcomers and veterans of client/server technology are uncovering some novel ways to cope with astronomical and ever-growing service and support costs. Cost-cutting tactics include playing hardball when negotiating software contracts, promptly dropping finger-pointing vendors, doing without support-intensive software upgrades and formally training unofficial and often clandestine systems experts in the user community. *Pages 1 and 14*

One year after NAFTA's passage, U.S. companies looking to open up shop in Mexico can still expect communication difficulties when they get there. The problem isn't a language barrier; it's the slow process of rebuilding an inadequate telecommunications infrastructure. Early venturers are sticking with U.S. high-tech solutions for now. *Page 63*

The Pentium chip flaw is just the latest case of computer math mistakes, which have included errors built into Patriot missile software and the Windows 3.1 calculator applet. However, experts say the extensive publicity should lead to more healthy skepticism about computer output. *Page 4*. The Pentium flaw led IBM to pull systems based on the chip off the market last week. *Page 12*

Who's in charge here? An award-winning on-line cancer information service sponsored by the University of Pennsylvania went dark last week in the midst of a dispute over who should control its content. The university reprimanded the service's founder for failing to give co-editors full system access. *Page 8*

On site this week: Hertz and Avis are rolling out onboard navigation systems to their rental fleets as part of their ongoing battle for starker share supremacy. *Page 29*. The Men's Wearhouse hopes Unix-based in-store systems will keep its retail outlets on-line even when the corporate network crashes. *Page 45*

The 5th Wave by Rich Tennant

"THE FUNNY THING IS, I NEVER KNEW THEY HAD DESIGNER PUBLISHING SOFTWARE FOR DAYER SHREDDERS."

(201) 930-8200 dept. 123

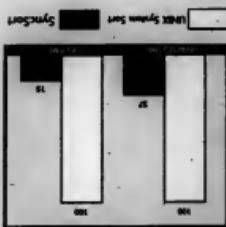
UNIX

The UNIX System Sort

UNIX has its advantages, but its System Sort isn't one of them. All it can do is sort ASCII text - slowly! Syncsort provides the performance and functionality you need to make your commercial applications work.

To order Syncsort or a FREE copy of our booklet - *Making Your Commercial UNIX Applications Work* - call us.

FUNCTIONS

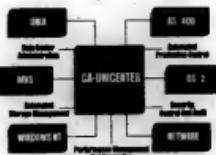


PERFORMANCE



1. Standardize On A Common GUI Interface That Minimizes Training Costs And Boost Productivity.

2. Protect All Your Data With Unlocked Security Software That Supports Every Platform And Operating System Across Your Entire Enterprise.



3. Choose A Client/Server Application That's Interoperable, Scalable and Portable.



4. Demand An Open Solution That Supports All Key Industry Standards And Protocols.

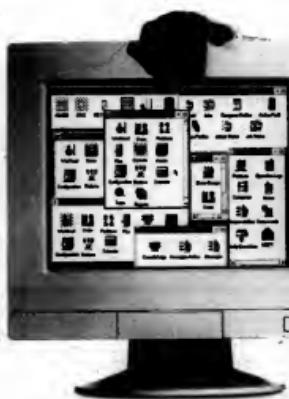


5. Partner With The World's Leading Software Company.



6. Leverage Your Systems Management Experience, Expertise And Personnel.

7. Replace Separate Point Products With A Single, Integrated, Comprehensive Solution.



Presenting The 7 Commandments Of Systems Management Software.



When choosing your systems management software, you shouldn't have to make a leap of faith. And with new CA-Unicenter, you don't have to. Because CA-Unicenter is the single, integrated systems management solution that solves all of the challenges of managing client/

server computing across heterogeneous platforms.

So call today for more information about the systems management software you can believe in: CA-Unicenter.

**Call 1-800-225-5224, Dept. 10102
For More Information And
To Register For The CA-Unicenter
Software Giveaway.**

CA-Unicenter®

Integrated Client/Server Systems Management Software

COMPUTER ASSOCIATES
Software superior by design

© Computer Associates International, Inc., Atlanta, NY 11706-7000. Offer good in U.S. and Canada only. All other product names referred herein are trademarks of their respective companies. Requirements for Software Giveaway is available through call center number.

Unplugged Internet board incites debate

College officials charge creator of on-line cancer service with limiting access

By Julia King

Oncolink, an award-winning cancer information service, went dark last week in the midst of a power struggle at the University of Pennsylvania over who should control its content.

Whether the plug was intentionally pulled or the system crashed accidentally remains unclear. Still, the incident highlights the policy challenges facing organizations new to the information highway.

"This strikes to the heart of one of the most difficult questions of on-line information, and particularly the Internet, which is finding a balance between the opportunity to spread information widely vs. quality control," said Daniel Dern, a consultant and author of *The Internet Guide For New Users*.

"At the moment, the Internet is one of the world's largest homes of freely available information, but much of it is also inaccurate and out of date," he added.

The Oncolink incident involved Loren Buhle, an assistant professor of physics in radiation oncology and co-founder of the 11-month-old Philadelphia-based service, which is sponsored by the university's cancer center. Last week, Buhle was reprimanded by university officials for failing to furnish full system access to two Oncolink co-editors.

"Loren had the computer set up in such a way that only he had access to it. He was the only one who could write or delete from Oncolink, and he was posting information that either he had written or obtained from other sources that the other editors had never seen," said department chairman Gilles McKenna.

The university's chief concern, McKenna said, is data accuracy. "If we are putting our name behind it, it should be important we stand by. We're not interested in being *The National Enquirer of cancer*."

Buhle, meanwhile, described the university's actions as a power play for a

one-of-a-kind information resource for which he said he deserves most of the credit. In the midst of the struggle, Buhle said he believes the university intentionally crashed the system, an act which McKenna denied.

"This was my creation. I'm not supposed to say that, but it's true," Buhle said. "It is a phenomenal resource. No amount of money could buy the goodwill Oncolink has brought to the University of Pennsylvania. Now they want to control it."

Buhle, whose 5-year-old daughter has cancer, has charged McKenna with attempting to censor nonmedical information, such as articles on sexuality and self-image, from Oncolink's database—another charge McKenna denied.

"I know the culture on the Internet is very hostile to the idea of censorship, but

I don't view this as a censorship issue. It's an issue of the integrity of the process," McKenna said.

According to Mike Godwin, an attorney at Washington-based Electronic Frontier Foundation, there is no bulletproof Internet usage policy for organizations to follow when setting up guidelines. "Companies can pretty much develop any policy they want," he said.

At Digital Equipment Corp., whose employees have had Internet access since 1988, the company's code of ethics doubles as its Internet usage policy:

"At one point we gave some consideration to developing a policy for how employees could use the Internet, but it finally hit us that the Internet is so different from the telephone or the fax machine," said Russ Jones, program office director of Digital's Internet Business Group.



Loren Buhle says Penn wants to control his cancer service

Oracle to ease database management concerns

By Kim S. Nash

Oracle Corp. plans to unveil a set of drag-and-drop utilities for the care and feeding of new low-end databases expected to be announced Jan. 17, Oracle sources confirmed last week. Further, Oracle is working on software agent technology to be shipped during the next year that would let users more easily monitor remote databases from one central location.

Such graphical administration products are

a must for Oracle if it

is to compete with Microsoft Corp. in the shrink-wrapped, low-end database realm, users and analysts said.

"They've got to make their low-end look like one coherent entity, not a bunch of little products strung together and requiring traditional Oracle support," said Ricki Finekstein, an analyst at Performance Computing in Chicago.

And Oracle knows it.

"The company's

plan to replace its Group Server database line from a per-user model to one that prices server and client licenses separately, officials declined to cite, others here said.

Dividing memory and disk space among multiple users told the new pricing would be similar to Microsoft's SQL Server scheme.

for databases, said Kevin Loney, a corporate database administrator at Astra/Merit in Wayne, Pa. Loney recently published *The Oracle DBA Handbook* on database management.

Client/server systems demand that "more and more people who don't necessarily have database-specific skills are being asked to interact with Oracle and Sybase and other products like that," Loney explained.

Oracle's game plan

To get the ball rolling, Oracle plans to introduce more powerful tools to manage PC- and workgroup-level Oracle databases.

A Shared Oracle, to manage when and how file and applications, such as network drivers, Microsoft's Object Linking and Embedding interfaces and development tools, access and use Oracle databases.

• Server Manager, to let information systems managers remotely change database schematics or other server-level functions.

• Simple Network Management Protocol (SNMP) support, to let any SNMP-compliant framework, such as IBM's NetView, monitor and troubleshoot Oracle databases.

The tools will be bundled for free with Oracle's single-user Personal Oracle 7 database for Windows, OS/2 and Macintosh and Oracle 7 Workgroup Server, Benioff said. Pricing for the packages is not yet final, but "it'll be aggressive," he said.

Microsoft, meanwhile, plans to include similar point-and-click administration aids in its SQL Server 95 database, which is due out sometime next year. However, many of the tools, collectively code-named Starlight, will not appear in the first release of SQL Server 95 (CEN, Dec. 12).

bread-and-butter Unix databases "have been difficult to install because they're system-level products, but we need to change that," said Marc Benioff, vice president of Oracle's client/server systems group.

Simpler database management is all the more important as network and applications managers increasingly have to know and care

SGI answers Sybase's parallel plea for help

By Kim S. Nash

Inside and out, Sybase, Inc. wants help doing parallel processing.

The Emeryville, Calif., database company is expected to announce today that Silicon Graphics, Inc. (SGI) will provide engineering know-how for building parallel features into the engine of Sybase's upcoming Navigation System 11 database.

The deal also calls for the firms to port and tune System 10 products for Challenge, SGI's symmetrical multiprocessing (SMP) server platform. Nearly 100 user sites have asked either Sybase or SGI to get on the stick with such work, said Nancy Sibotti, business development manager at Sybase.

Today's announcement would elevate Challenge a notch on Sybase's list of things to do. "We will now be with the handful of other platforms [on which] Sybase previously works to put its product line," said Abe Hakimia, director of marketing at SGI's advanced data division.

Among the Sybase products to be tweaked for Challenge boxes are Replication Server and several management tools.

Meanwhile, the parallel technol-

ogy side of the deal harkens back to Sybase's past two years ago with AT&T Global Information Solutions' unit Sybase and AT&T GTS teamed to create Navigation Server, a separate add-on product de-

signed to let the Sybase System 10 database do parallel processing. Navigation Server has been delayed by more than a year while the firm worked on speeding up performance. It is due to ship before the end of the year.

But joint Sybase/Sybase users who want Sybase databases running on Challenge to do parallel processing will have to wait for System 11 because Navigation Server will not be ported to SGI hardware, Sibotti said.

System 11, which Sybase said will support clusters, SMP and massively parallel systems inside the database engine, is due to ship during the next two years.

Still unknown is whether Sybase's Build Momentum development tools, or those expected to be acquired from Powersoft Corp., will be ported to SGI platforms. Sibotti said Sybase's proposed \$600 million buyout of Powersoft has not been approved by federal agencies.

ORACLE⁷ OUTPERFORMS THE COMPETITION.

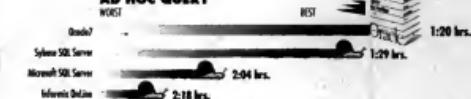
RANDOM WRITE TRANSACTION MIX (on 60 active workstations)



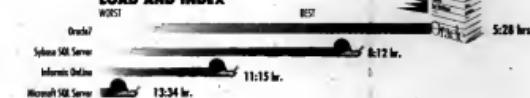
BLOB RETRIEVAL (on 60 active workstations)



AD HOC QUERY



LOAD AND INDEX



EXPORT



"The best performer on this extremely demanding test" was Oracle7... The engine ran error free and required very little tuning to achieve the measured performance."

PC Magazine



10/12/93
Oracle7 Server
for NetWare



10/11/94
Oracle7 Server for
NetWare, 7.0.2



For complete PC Magazine results
call 1-800-633-1071 Ext. 8132

1994: Year-end impressions

Over the course of a year, I have the benefit of gathering a wide variety of impressions on the state of IS and the industry. Here, for example, are a few I've garnered from a variety of sources as the year ends.

Energy Services, Inc. recently held one of its quarterly meetings for its 360-person IS department. CIO Dennis Walsh orchestrated a series of organizational announcements, recognized a dozen individual accomplishments and initiated an on-the-spot bring-up rights session.

Energy is a four-state utility with headquarters in New Orleans and revenues of \$9 billion a year. It serves 2.7 million electric customers. Acquisitions and consolidations keep the IS staff jumping, so does bringing a handle on the nearly 10,000 PCs in use at the company. If it's clear from this quarterly staff meeting (how many companies do that?) that Energy IS officials have kept morale high while reducing staff during the past three years.

The company's IS group continues to integrate disparate systems, setting standards that are implemented throughout Energy and controlling the proliferation of PCs. IS staffers have written software to configure PCs over the network, tracking their status and electronically updating applications and operating systems.

Third-party software, such as Enterprise Desktop Manager from Novadigm, Inc. in Mahwah, N.J., is now available to help manage PCs in this fashion. But when Energy started, there were no such packages on the market.

* The Emerging Technology Executive Forum is a monthly meeting of IS managers from Los Angeles. On Nov. 25, this group hosted three speakers on the topic of likely changes to the technology scene by the year 2000. The most frequent question was, "What advice can you give the IS manager?" The advice was mostly: "Stay flexible, stay people/client-oriented, and stay tuned."

* Seymour Cray's Colorado Springs Branch, Cray Computer Corp., announced the Cray-3 a month ago and is still awaiting its first customer. That it doesn't have a customer yet is not necessarily surprising. So far the Cray-4 exists as four prototype machines undergoing diagnostic testing and benchmarking. The vendor hopes to deliver the first orders in the first half of 1995.

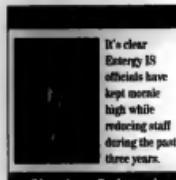
The gallium arsenide-based system — a four-hour burn, with a 1-nsec clock cycle or operating speed of 1 GHz — is believed to be twice as fast as the Cray-3. In contrast, the fastest silicon chip on the market, Digital's Alpha 21164, runs at 300 MHz. The price tag for an eight-processor version is less than \$6 million.

Cray continues to operate in the red, but it received additional financing in October from a group of foreign investors. It's a benefit to have at least one manufacturer producing gallium arsenide logic chips in case the rapid advances in silicon run out of steam.

* After recommending Smalltalk as the object-oriented language of choice for IS shops [CW, Nov. 7], I heard from a disgruntled reader in Santa Barbara, Calif., who asked to remain anonymous. Smalltalk "is an old design, ignoring all the progress in software engineering of the past 20 years," he said. It is "more elegant" than C++, he allowed, "but that isn't hard to achieve."

His recommendation was to go with a modern object-oriented language, Eiffel, sponsored by the Non-Profit International Consortium for Eiffel. I have heard good things about Eiffel but must point out that no ANSI standard exists for it. For that matter, there is no ANSI standard for Smalltalk or C++, but work on a standard for both is under way in ANSI technical committees.

So I would stick with the original recommendation: Go with Smalltalk. It remains better focused as an object-oriented language than C++, and it will be a standard language long before Eiffel.



Charles Babcock

It's clear
Energy IS
officials have
kept morale
high while
reducing staff
during the past
three years.

News Shorts

Digital issues warning about Ultrix security glitches

Digital Equipment Corp. last week said it discovered security vulnerabilities in Ultrix Versions 4.3, 4.3a, 4.4; DEC OSF/I Versions 1.2, 1.3 and 2.0, and DECnet-Ultrix Version 4.2. The flaws "under certain circumstances may expand user access or privilege," Digital said in an alert sent over the Internet. Fixes will come in the next releases of Ultrix and DEC OSF/I. In the meantime, Digital "strongly urges" users to upgrade to at least Ultrix Version 4.4 and DEC OSF/I Version 2.0, then apply software fixes available from company support channels.

Justice Department postpones Microsoft hearing, continues interviews

A hearing slated for last week to look into allegations that Microsoft Corp. has violated at least the spirit of the consent decree it signed with the U.S. Department of Justice was postponed. The reason: Judge Stanley Sporkin had a scheduling conflict. Meanwhile, lawyers for the antitrust division of the Justice Department have recently interviewed industry executives about licensing terms that Microsoft is offering for Windows 95, the upcoming version of Windows. A Justice Department spokeswoman declined to comment on the specifics of the department's findings. A new date for the hearing has not been set.

Pathtracker gets ODBC support

With Distributed Technologies Corp.'s announcement this week of Open Database Connectivity (ODBC) support for its Pathtracker asset discovery and management application, users for the first time will have a standards-based way to bring information about client/server hardware and software into a variety of leading databases. ODBC support makes it easier for companies to move applications from PC-oriented databases to larger, Unix-based databases as its end-user population grows, said Rick Hoest, marketing director at Distributed Technologies.

Microsoft to ship Win95 programs

Between now and 60 days after the release of its Windows 95 32-bit desktop system, Microsoft Corp. plans to ship Windows 95-specific versions of several developer and end-user tools, including Access and FoxPro, as well as new versions of Visual Basic and Visual C++. Some of these tools are likely to ship prior to the final release of Windows 95 at mid-year, according to Roger Helgesen, senior vice president of Microsoft's Developer division. Officials also said the second beta version of Windows 95 has now been shipped to 48,000 beta testers.

Apple sues over QuickTime code

The battle for control of the emerging multimedia market has turned to the courts, with Apple Computer, Inc. subpoenaing Intel Corp. and Microsoft for video software that allegedly contains Apple code. At issue is whether Intel's Display Control Interface (DCI) software and Microsoft's Video for Windows program include copyrighted Apple code that Apple uses in its QuickTime for Windows video-enabling software. Apple filed a copyright infringement suit two weeks ago against San Francisco Canyon Co., a small software development house that helped Intel develop DCI.

Sun allows Spring test-drives

By midyear, Sun Microsystems, Inc.'s SunSoft, Inc. software unit will have shipped its object-ori-

ented Spring operating system to a raft of university scientists to take on a test-drive. Key features include network-based systems administration and message-passing between enterprise-wide distributed objects. Sun's Solaris 2.x operating system will benefit from the scientists' feedback, because Solaris is expected to absorb some of Spring's technology after next year.

Powersoft ships Version 4.0

Powersoft Corp. came in on schedule last week when it began shipping its Enterprise Series 4.0. The series includes PowerBuilder Enterprise for Windows, PowerBuilder Desktop for Windows, Team/ODBC for Windows and InfoMaker, a data-access and reporting tool. Support for Macintosh and the Open Software Foundation's Motif platforms are on schedule for early 1995.

SHORT TAKES Silicon Graphics, Inc. (SGI) joined the interactive-TV fray, offering media servers, system software, a user interface, video-on-demand and game applications. Time Warner Cable is using SGI's systems in its interactive TV network.... On Demand Software & Inc. announced that its WinInstall 4.0 software distribution package can now be used as a plug-in module to Microsoft's Systems Management Server (SMS) and Symantec Corp.'s Norton Administrator for Networks.... Lotus Development Corp. has licensed Unisys Corp.'s TransIT 500 electronic-mail directory software to run with its Lotus Messaging Switch E-mail interchange package.... Baan International B.V. last week said Cap Gemini Segel will provide implementation, technical support and training to Baan's customer base worldwide.... Now users have another choice for managing storage on Microsoft's NT networks, with the introduction of Legato Systems, Inc.'s Network Client for Windows NT.... IBM has sold its Havant, England, disk-drive plant to the facility's management, which plans to expand its efforts to find customers other than IBM.

Now managing the world's most powerful database is child's play.



ORACLE7 WORKGROUP SERVER: REALLY, REALLY SIMPLE YET VERY, VERY POWERFUL.

Oracle7 Workgroup Server replaces SQL database complexity with point and click simplicity.

Pretuned and preconfigured for results right out

of the box, Oracle7 Workgroup Server is the ideal database for workgroups. Best of all, it's 100% compatible with all leading Windows®



Friendly graphics indicate system status.

applications and tools. Add a powerful array of graphical administration

tools plus Oracle7's blistering speed and infinite scalability (PC Magazine's Editors' Choice 1993, 1994 and PC Week's Analyst's Choice 1994), and you have an affordable, simple yet powerful server the competition may

promise, but can't deliver.



Simple checklists & pick lists make administration easy.

With prices starting at \$995, there's no better solution for managing your workgroup information.

For a FREE informational video call
1-800-633-1071 ext 8169.

ORACLE

©1995 Oracle Corp.



NOTICE Oracle®
Workgroup Server
for NetWare 7.0/8.

Sequent spells double trouble for HP

Boeing, Hyatt nix HP 9000 for high-end needs

By Mark Halper

Hewlett-Packard Co. has a lot to crow about these days, but when it comes to scaling up the processing power of its high-end Unix system, the tune changes

to more of a chirp.

Scalability shortcomings came to light recently when The Boeing Co. and Hyatt Hotels Corp. both selected multiprocessor systems from Sequent Computer Systems, Inc. in Beaverton, Ore., for huge

processing needs involving thousands of users.

In both cases, the users evaluated HP's centerpiece mainframe alternative SPP's and PA-RISC-based HP 9000 Model T500, and decided that the Pentium-based Sequent Symmetry 5000 had superior performance when adding processors.

"Considering our requirements for scalability and modularity, the Sequent machines best met our needs," said Pat Baldwin, senior manager of procurement at Boeing's information systems arm, Boeing Computer Services.

John Biggs, chief information officer at Hyatt's Regency Systems Solutions IS unit, echoed those remarks. "I think they

Special Offer!

Save over \$1000 on
two boxes of
Symmetry 5000
processors. Plus
a license for
use.

\$249!



EXPLORE. UNDERSTAND. WIN.

Look at your data in a whole new way. Find answers to the questions that drive your business. Beat the hell out of the competition.

PowerPlay® Business intelligence on every desktop in the enterprise.

Call 1 800 223-2321, ext. 6365. In Canada, call 1 800 267-2777.

COGNOS®
TOOLS THAT BUILD BUSINESS

© 1995 Cognos, Inc. All rights reserved. COGNOS and COGNOS logo are trademarks of Cognos, Inc. PowerPlay is a trademark of Cognos, Inc. © 1995 Cognos Corporation. Cognos, Inc. This logo, business and PowerPlay are registered trademarks of Cognos International.

SEQUENT SYMMETRY

Despite scalability problems at HP's upper end, both Hyatt and Boeing remain avid users of lower-end HP Unix servers. The HP 9000 has been the Boeing Commercial Airplane Group's application server of choice for about a year, and Hyatt uses HP 9000s to help manage daily hotel operations.

Recognizing its scalability gap, HP said it is working on improvements that will include in the next release of its Unix operating system, HPUX 10.0. The operating system, which was delayed earlier this year, is expected in the first quarter of 1996.

"We have clearly stated that with HPUX 10.0, we're looking at providing dramatic performance improvements, especially with high-end scaling," said David Scott, HP 9000 software product line manager.

Scott cited a Transaction Processing Performance Council TPC-C benchmark released earlier this month in which an eight-processor T500 running Informix Corp.'s Online Dynamic Server Version 7.1 on HPUX 10.0 scored 3,118 transactions per minute at \$8044 per transaction minute.

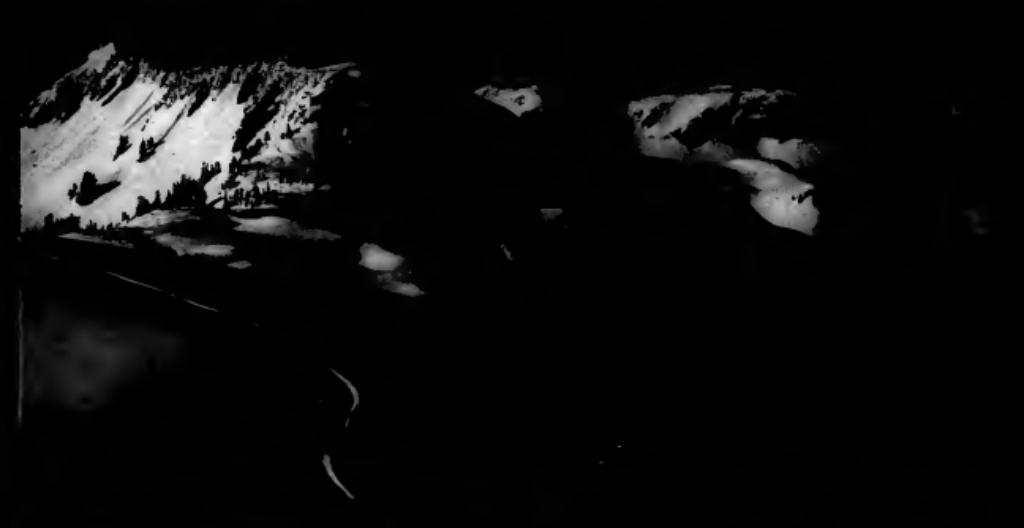
A council spokeswoman noted that Sequent did not participate in the group's most recent round of testing.

A step in the right direction

Sequent declined to elaborate on scalability improvements in HPUX 10.0 except to say that they will enable users to take full advantage of the potential processing power of the 12 processors supported by a T500. Currently, as processors are added to the HP system, users do not gain as much performance as when they add a processor to a Sequent or other multiprocessing system.

Despite scalability problems, HP's Unix server business continues to grow at a fast clip, said Dave Mills, an analyst at Dataquest, Inc. in San Jose, Calif. Mills said Unix server sales grew by more than 40% this year.

The Boeing Commercial Airplane Group will use its Sequent Symmetry system as an Oracle Corp. Oracle 7 database server housing technical information, mammals and other data on airplanes. Hyatt chose Sequent's largest box, the Pentium-based Symmetry 5000 SE60, for its reservations system.



How can a graphical interface help you master your programming environment?

The Workbench® Graphical User Interface

It's all a matter of control... and Micro Focus COBOL Workbench® has a new graphical user interface that

gives it to you.

Start with a

programming environment you configure to accommodate the way you work. Quickly perform tasks through customized pull-downs and context sensitive menus in native Windows™ or OS/2® environments. Open a debugging session by simply dragging your project onto the debugging icon. Now you're in a visual programming environment where you can edit, compile and debug in a single window. Workbench even uses colorized syntax for quick identification of sections, verbs, data items, and typing errors. That's the kind of control that makes COBOL Workbench more responsive and you more productive.



The Workbench COBOL environment is fully compatible with OS/2 and Windows.

See for yourself. Contact Micro Focus at 800 MF COBOL Ext. 3201 and ask for your copy of the Micro Focus Interactive CD. Do it, you'll find descriptive and interactive demonstrations of Micro Focus Application Development Tools.



There's a lot more to it.

MICRO FOCUS®

Micro Focus and COBOL Workbench are registered trademarks of Micro Focus. All other trademarks and registered trademarks are property of their respective companies.

PowerPC runs OS/2

By Ed Scannell

IBM stuck to its promise to deliver a beta version of OS/2 for the PowerPC by year's end, shipping the 32-bit operating system with IBM PowerPC-based desktop systems to 150 corporate and third-party developers.

While company officials admit they did not focus on performance aspects of the product, they said it contains a full complement of development tools.

Those tools, which include support for Workplace System and System Object Model-2, let developers create new applications that run exclusively on the PowerPC. The tools also enable developers to port existing 32-bit OS/2 applications now running on Intel platforms.

This release comes two months after 16-bit OS/2 applications, which is what most corporate developers have created so far, though that support is expected in the final product.

"This timeline is in line with bringing up 32-bit applications. Our work with One Up Corp. has gone well, so users that want to move over their 16-bit OS/2 applications can use our [Smart] tools," said Mike Baril, IBM's worldwide brand manager of OS/2 for the PowerPC. IBM is not changing developers for the beta software or hardware, Baril said.

The first beta also includes support for running DOS and Windows applications, a key feature that will affect IBM's success in selling the product outside its corporate accounts.

If the first beta test goes well, IBM may conduct a larger second beta late in the first quarter of next year. Baril declined comment on whether there would be a second widespread beta or if IBM would ship a finished version by its internal goal of June 1996.

Developers offered OS/2 lures

By Ed Scannell

In an effort to counteract the expected Windows 95 tidal wave, early next year IBM will launch aggressive technical and marketing programs designed to persuade Windows 95 developers to port their applications to OS/2.

IBM will begin marketing One Up Corp.'s upcoming Smart 2.0 tools and porting companion conversion tools by midyear for a nominal fee, described as "used to nothing" by one source briefed by the computer giant. That should allow Windows 95 developers to quickly port up to 70% of their 32-bit code to OS/2, saving developers "tens of thousands of dollars in development costs," other sources said.

IBM will also offer Windows developers extensive technical assistance at "very reasonable costs," according to developers briefed last week.

The strategy represents a marked departure from previous IBM attempts to rustle up software developer support. In the past, IBM has forked over millions of dollars to independent software vendors to encourage them to either create new applications from the ground up or port their existing Windows counterparts.

Those efforts often resulted in OS/2 applications that offered little advantage over their Windows counterparts.

This latest strategy appears to be IBM's most practical yet. In the past, the company has tried to reverse-engineer Windows support into OS/2 with source code from Microsoft Corp. Since the "divorce settlement" between IBM and Microsoft, in 1992, IBM no longer has access to such source code.

Using the One Up tools places the responsibility of con-

verting code on application developers, but they can do so with a tool that creates for less than what they used in the past.

"IBM is out again to sell the Windows world on the wonders of OS/2, but technically, at least, this approach seems to make sense," said one third-party developer familiar with the company's plans.

"We would rather see [IBM] invest more time than trying to make Warp binary-compatible with Windows 95," said Hilmi Ongur, senior product manager of OS/2 applications at Lotus Development Corp. in Cambridge, Mass.

Too late for some

Still, some OS/2 users and third-party developers wonder if it is too late.

"If they had this sort of strategy in place, say, in 1992 and gave [tools] away to every user they could find, they could have generated some interest," said Bob Evans, a senior technical consultant at Nevada Power Co. "But now it is difficult to envision people drooling over something like this."

IBM also intends to aggressively support developers after they port their Windows applications to OS/2. They will spend tens of millions of dollars to help developers with cooperative advertising of their products as well as training courses to educate and better train their Windows users, according to sources briefed last week.

"Giving [developers] an inexpensive way to get a good return on investment on an OS/2 application from a Windows user base is just the first step," said Richard Drews, president of One Up in Dallas. "IBM is also focusing on ways to collaboratively sell these apps once they are done. They appear to be through playing games."

Users question OpenVMS future

By Jean S. Bowman

ASAHEIM, CALIF.

Migration issues weighed heavily on the minds of attendees at the Digital Equipment Computer Users Society (DECUS) show here last week, as they pressed the company for stronger signals about whether to stay with the OpenVMS operating system environment or switch to Digital Equipment Corp.'s OSF/1 Unix or Microsoft Corp.'s Windows NT.

When the OpenVMS program was fighting for resources in a down-sized company last year, losing up independent software vendor support was not a top priority, said Jessie Lipson, vice president of the OpenVMS Systems Business Group. "We had to get OpenVMS healthy within Digital again," he said. But now, working with third-party software partners is "the single biggest strategic issue," Lipson said.

Users who spoke here were concerned about whether they will need to move to Unix or NT to get enhancements to their software applications. And analysts said independent software vendors are gravitating toward Unix and NT because both systems are portable to many types of hardware, while OpenVMS runs only on Digital systems and servers from Asysco Systems Inc., a third party in Wheat Ridge, Colo.

Randall Rosine, a senior scientist at Science Applications International Corp. in Panama



City, Fla., said he is worried about OpenVMS support for the next release of ANSI's Ada programming language. "Ada was one of DEC's crown jewels, and I'd hate to see them lose it," he said. "We have to move from VMS to Unix of some sort to maintain compatibility with current Ada standards."

Others wanted to know whether to move to NT for some applications. "It'd rather not do some re-training and add another operating system," said John Vilander, MIS coordinator in the Epidemiology Department at the University of Minnesota at Minneapolis, which has a VAX 4300, an Alpha 4610 and six VAX stations. "I'm not religious about VMS vs. Unix vs. NT, but it's [about] efficiency and economy."

Also, Digital executives have ruled out mixed clusters of OpenVMS and OSF/1 machines for now, even though OpenVMS, Unix and NT machines can be linked by TCP/IP networks.

Analysts said Digital managers to stabilize its OpenVMS business this year but faces erosion of its OpenVMS base as users replace VAX.

"It's a natural breakpoint," said Jonathan Eunice, research director at Illuminata in Holis, N.H. About 70% of Alpha 2100 servers run OpenVMS, while roughly 30% run Digital's OSF/1 Unix and about 10% run Windows NT, he said. But fewer than half of OpenVMS/VAX users moving to RISC Unix systems choose Digital's OSF/1 Alpha. Eunice said.

Oracle does its '64 bit' at DECUS

Product highlights at the DECUS show included the following:

► Oracle Corp. demonstrated a 64-bit port of Oracle 7.1.6, which allows users of very large databases to pull thousands of rows of data into 8.8G bytes or more of real memory. Digital expects to jointly market the Oracle 64-bit software with its next-generation 12-way AlphaServer in the first quarter of next year.

The 64-bit port will virtually eliminate disk I/O to fetch data from disk drives, said Bob Pariseau, vice president of Oracle's DEC Products Division. The port to Digital's 64-bit Alpha servers paves the way for ports to 64-bit Sun Microsystems, Inc. and IBM systems, which are expected to ship in 1995.

► A new OSF/1 3.0 Unix operating system will likely be enhanced in a 3.x release to support the 12-way AlphaServers.

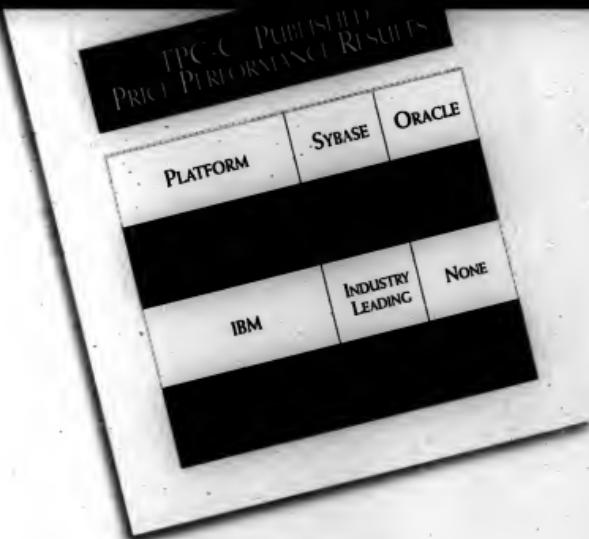
In early 1995, Digital sources said, an OSF/1 4.0 release is scheduled to appear in the third quarter of 1995, including complete support for X/Open's Spec 1170 Unix brand, support for the Open Software Foundation's (OSF) Common Desktop Environment user interface and improved systems management capabilities.

An OSF/1 version, said Ali Unlu, director of Unix clients, will run in just 24M bytes of main memory and 340M bytes of disk space; today's OSF/1 runs in 25M bytes of main memory and 500M bytes of disk space.

► Digital announced that DECUS networking software will no longer be required for clusters, effective with OpenVMS 6.2 in the first half of next year. Also, OpenVMS 6.2 will be more "TCP/IP-friendly," a spokesman said and will enable clustering with SCSI-based systems. —Jean S. Bowman



"LOOK. IN HEAD-TO-HEAD PRICE PERFORMANCE, ORACLE TURNS TAIL."



The results are clear: while Sybase has mastered real-world performance, Oracle has mastered the art of omission. It's no wonder Oracle has avoided head-to-head TPC-C competition. In another real-world benchmark on Sun, Sybase more than doubled Oracle's published back-up and restore rate - while maintaining high throughput for OLTP and decision support. For the hard numbers on mixed-load performance, call 1-800-SYBASE-1, ext. 6410.

 **SYBASE**
THE ENTERPRISE CLIENT/SERVER COMPANY

Copyright 1992, Sybase Inc. All rights reserved. Sybase is a registered trademark of Sybase Inc. TPC-C is a trademark of the Transaction Processing Performance Council (TPC). Other company or product names may be trademarks of their respective holders.

IS takes terminal route to cutting client/server costs

By Rosemary Cafasso

It may be contrary to conventional wisdom, but dumb terminals are becoming a smart tactic in some client/server migrations.

A number of information systems managers are finding that handing onto terminals instead of buying PCs can save hundreds of thousands of dollars when deploying client/server applications. This money-saving move is particularly critical given that so many older client/server costs can run out of control, users said (see related story page 1).

For example, Kevin Reilly, vice president of IS at Richardson Electronics Ltd. in Lisle, Ill., said he will not buy client/server software that does not offer PC and terminal technical support. The reason? While some users in corporate headquarters will need to work on PCs, hundreds of other users in the field currently use terminals and

should stay with terminals, he said.

"For us, it would be a million dollars to buy all new PCs," Reilly said. "If you are on a terminal six or eight hours a day doing mostly data entry, there's no reason you can't continue on a terminal."

But not everyone is a fan of this client/server-dumb terminal partnership. Some observers said it defies one of the main goals behind adopting client/server in the first place — providing users with an easier-to-use computing platform.

"There are technology-savvy users who are not attracted to the power of a GUI and are happy to extend the life of their terminal," said Babby Cameron, a senior analyst at Forrester Research, Inc. in Cambridge, Mass.

In fact, some client/server software providers, such as Dan Bradstreet Software and SPC Financials, Inc., do not offer character-based terminal support with their software and have no plans

to do so.

Yet some IS executives who scoff at this attitude claim that sticking with terminals in the early days of a client/server migration can help ease a gradual transition to the newer computing model.

Worthwhile savings

Larry Jones, vice president of IS at Lambda Electronics, Inc. in Melville, N.Y., installed Avakos Software, Inc.'s manufacturing software with terminals two years ago and plans to begin replacing them with PCs next year. Jones said Lambda has saved about \$2,000 per user or about \$20,000, by not buying PCs initially.

A similar cost-cutting move took place at Midland Pipe Co. in New Orleans. Frank Campisi, vice president of finance, estimates he saved at least \$20,000 in hardware costs up front and \$1,500 a month in the additional leased-line fees the company would have paid to support PC users in the field.

Client/server trimmings

CONTINUED FROM PAGE 1

front guaranteed prices.

e Promptly dropping finger-pointing vendors that do not cooperate with their counterparts on a client/server project.

f Doing without certain software upgrades that can often mean additional training and support costs.

g Formally training unofficial and often clandestine systems experts in the user community.

"You always have unofficial experts out in the user area. They get very good on a particular system, and other people ask them questions," said John DuSilva, systems development manager at Chicago-based Gas Research Institute.

"What we are doing is acknowledging they're out there and training them in specifics, which will keep costs down."

The way DuSilva figures it, training increases their chances of dispensing correct information the first time around than minimizing potentially costly systems problems down the road.

Also, DuSilva said he will dismiss vendors that will blame others rather than handle problems because the finger-pointing adds to costs. "So we haven't been shy about dropping vendors that don't work well with others," he said.

Out-of-control costs

But even with one or more of these protective measures in place, costs can still spiral beyond what companies expect.

Take Suburbia Propane Co. in Whippany, N.J., which is installing SAP America, Inc.'s R/3 software. 85 director Steven Wells budgeted \$650,000 for consulting and service fees for the implementation. But so far, he has spent about \$700,000, and the project will run for at least another six months, during which time he expects to spend another \$400,000.

Part of the additional expense was due to the complexities of R/3, but another contributing factor was an unfreezable. "The recent popularity of R/3 has made it difficult to find experts and manage those."

"It's the lack of finding consultants that know SAP," Wells explained. "Then there's the turnover — people we've trained who are pulled out of here by companies like IBM's, it's outrageous."

Meanwhile, at New York-based Colgate-Palmolive Co., where a major project is under way to bring all systems under an enterprise client/server architecture, mainframe experts are pulling double duty as network and PC support personnel.

To cut support costs, "we're trying to rapidly implement new-generation systems and decommission current systems," said IS director Ed Toben. "We're training traditional IS people in network technologies. People working on PC development are picking up more LAN accountability."

Vendor guarantees

Seeking guarantees on price is becoming an increasingly popular approach to client/server cost management. More companies are willing to offer these, including Ross Systems, Inc., which last week said it will guarantee prices on financials and pilot projects for its manufacturing software in addition to its human resources software.

Walker Interactive Systems, Inc., which is rolling out client/server software this week, said it will launch a pilot program with a guaranteed price of \$100,000 to \$200,000.

Several users have devised cost-cutting techniques on the hardware and software side as well. Often, IS shops decide against an upgrade to save on training and support costs.

On the client side, "a lot of software products are coming out with new enhanced Windows versions, but you have to look at whether the upgrade is really needed," said Norman A. Schwartz, director of technical network support at Illinois Central Railroad in Homewood, Ill. "You have to weigh [features] against what it will take to get users acclimated. In some cases, we've said no because we couldn't afford it."

As another cost-cutting measure, some users are deploying client/server applications using terminals as the front-end component instead of buying PCs (see story above left).

Software AG copies IBM pricing

By Craig Steedman

Software AG last week gave new life to the hoary old adage that good things come in threes.

The German company became the third mainframe software vendor to make the leap and embrace the capacity-based pricing approach that IBM defined last spring. Software AG officials said adopting IBM's service-unit ratings could allow its customers to shave 15% to 35% off their bills, although the price breaks are greatest mainly toward the high and low ends of the capacity spectrum.

Service units are a measurement of CPU resource usage that allow for a more linear price curve than traditional tiered licensing provides. Besides lowering prices on new purchases, the service-unit approach can result in smaller jumps in software costs when mainframes are upgraded.

brings in a more powerful system, he added.

Service-unit pricing will hopefully reduce that tab, at least for the Software AG products that the state has, Duszewczyk said. But be cautioned that individual customers will have to "compute all the options and really run the numbers to see if it makes sense for them."

Not for everyone

Indeed, there are a couple of catches to Software AG's approach. Because IBM has not published service-unit ratings for older mainframes, the new pricing is available only to customers with the most recent ES/9000 machines, which are capable of supporting IBM's Parallel Syplex coupling technology.

Byron Vranas, director of enterprise systems at Software AG North America, Inc. in Boston, Va., said customers also will have to buy upcoming software that allows Software AG's Database database to share data across a coupled system of mainframes. That carries a base charge of about \$40,000 and increases according to the service-unit rating on a mainframe, he said.

IBM also requires software to be updated in order to qualify for its service-unit pricing, noted Mike Egan, an analyst at Meta Group, Inc.'s Burlingame, Calif., office. Vendors essentially are setting up "a Parallel Syplex toll gate" to get back some of the revenue they are giving up by switching to the new pricing approach, he said.

Welcome break

Software AG's move, which followed similar steps by Legend Corp. and Baile & Babbage, Inc., was welcome news to cost-conscious mainframe users such as Greg Oniszewczyk, technical manager for database services for the state of Minnesota in St. Paul.

Under their licensing, the software price increases triggered by mainframe upgrades "send sticker-shock tremors through you," Duszewczyk said. Minnesota's bill for all of its mainframe software typically goes up \$250,000 to \$500,000 when the state

Price break			
Examples of Software AG's new Parallel Syplex pricing compared with the cost of traditional licenses			
GROUP B3	TIERED PRICE	PARALLEL SYPLEX PRICE	ESTIMATED SAVINGS
TWO MACHINES	\$14,000	\$10,000	35%
THREE MACHINES	\$14,000	\$14,700	34%

Based on one-tier plan, for running Software AG's Adam, Abacus and Enter products on multiple Syplex Model 9000 mainframes.

Source: Software AG of North America, Inc., Boston, Va.

Borland

CONTINUED FROM PAGE 1

research firm in Framingham, Mass. Until the product's delivery, Borland had counted on dBase for Windows upgrade revenue to right the company's financial ship.

However, because it took Borland more than three years to ship the product, and as the product belongs to no application suite, the company effectively yielded its dominant position and surrendered revenue to its competitors.

For example, Microsoft Corp.'s Access, a relative newcomer compared with

these products also remain profitable.

Borland could right itself if its newly touted flagship product — Delphi 85, which it says will ship in the first quarter — is wildly successful. However, Version 1.0 of the client/server tool is unproven, and it is entering a market undergoing consolidation. Also, the continued losses are depleting the \$100 mil-

lion in cash Borland pulled in from the sale of Quattro Pro.

Analysts say Borland's best hope now lies in partnering, an area in which it has not fared well recently. A partnership with Sybase, Inc. in October went sour when Sybase bought one of Borland's main competitors in the tools' market, Powerbase Corp. And Borland

has yet to find any takers in comarketing and codeveloping its Interbase product.

Clearly, Borland, which bought dBase from Ashton-Tate Corp., cannot count on customer loyalty for revenue upgrades. For example, Mark Fontana, book shop manager at Northrop Grumman Corp. in Lake Charles, La., said his site has been using dBase since Ashton-Tate sold it.

"It doesn't matter to us," Fontana said. "Whoever inherits Borland, we'll go to them."

Painful choices

By giving up on DOS, Borland forfeits a market that produced \$94M in revenue in 1994

1993 1994

	DOS	dBase	Paradox	Windows	dBase	Paradox	Microsoft's Access	*Projected
	\$19.9M	\$5.9M	\$4.9M		\$5.9M	\$3.9M	\$2.9M	\$2.4M

Source: International Data Corp., Mountain View, Calif.

dBase, now holds 47% of the Windows PC database market, according to IDC. Meanwhile, dBase and Paradox combined — once the undisputed lords of the PC database market — now hold a 30% share. Even the fledgling Approach, sold through Lotus Development Corp.'s SmartSuite, holds down as much market share as dBase for Windows — 10.5%.

The revenue shortfall caused by the disappointing dBase sales will result in Borland's posting an estimated third-quarter loss of 60 cents per share and a loss of \$2.15 per share for the fiscal year ending March 31, 1995, Wallace said. Borland, which had revenue of \$384 million for its 1994 fiscal year, will post \$289 million in revenue for fiscal year 1995.

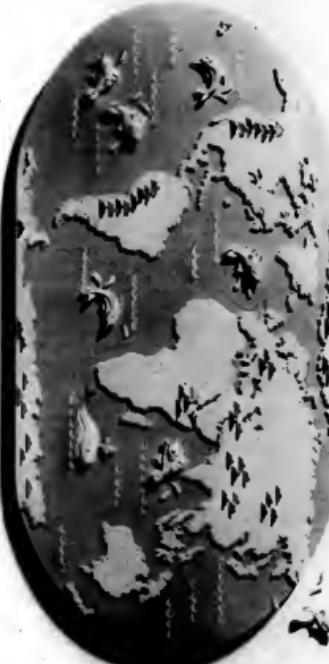
Painful cuts

It is clear that Borland has not succeeded in its efforts to price dBase for Windows as a premium product. Borland now must forfeit profits to stimulate revenue in cutting the product's upgrade list price from \$199 to \$69. Ironically, it was a drastic price cut in Quattro Pro that led to Borland's woes last spring. Analysts said they do not expect this most recent price cut to backfire in the same way.

Due to limited development resources, Borland is also making painful decisions such as killing development for future DOS versions of Paradox and dBase. Still profitable, these products generated \$94 million in the 1994 calendar year, according to IDC — roughly one-third of the projected \$289 million in total revenue for fiscal year 1995.

WordPerfect, the Novell, Inc. Applications Group, and Lotus have not ruled out future DOS versions of WordPerfect and the 1-2-3 spreadsheet, respectively, as

*We're setting
the world of printing
and publishing
on its end.*



For years, little has changed in the publishing and printing of documents.

Created in isolation and expensive to produce, documents tie up storage space and are costly to transport.

In many respects their value is often outweighed by their price. But now it doesn't have to be.

Because Xerox has developed "Open Document Services."

It's a new way of looking at print. A way that overcomes the limitations of printing by embracing the "digital" future.

So you can create and capture text and images.

Anywhere.

Manage and store them.

Anywhere.

Print and finish them.

Anywhere.

And do it in any format and run length.

Anywhere.

Through a series of alliances and partnering arrangements, Xerox offers flexible, scalable, and interoperable, quality printing and publishing solutions so you can mix and match the components you need.

The end result will always be the same: Quality documents exactly when, where, and how you need them.

Truly, Print On Demand.

Finally, Print On Your Terms.

Any way you look at it, the world of publishing will never be the same.

For more information on Xerox Open Document Services, call 1-800-ASK-XEROX, ext. 729.

THE DOCUMENT COMPANY

XEROX

REPORT The Document Company® and Open Document Services are trademarks of Xerox Corporation.

Modular messaging architectures forthcoming

By William Brundell and Suresh Mohan

Yielding to user demands, messaging vendors are rolling out architectures that will provide modular — not monolithic — paths to building enterprise-wide messaging systems.

Last week, Lotus Development Corp. laid out a comprehensive architecture highlighting a component-based approach to using Notes, CC-Mail and Lotus' messaging switch, formerly Softswitch, Inc.'s EMX, enterprisewide.

In doing so, Lotus officially killed its confusing Lotus Communications Server (LCS) strategy, which was widely seen as the merging of the company's CC-Mail and Notes product lines.

Users set the pace

Indeed, Lotus is now pitching the idea of CC-Mail's having its own file server and management tools that operate independently of Notes. Also promised is tighter integration between CC-Mail and Notes 4.5, which is expected to be available in the first half of next year.

The good news for CC-Mail users is that Lotus is not going to put a gun to your head and say, "Go to Notes," said Matthew Cain, an analyst at Meta Group, Inc., in Stamford, Conn. "Instead, users can migrate forward at their own speed."

Lotus also plans to roll out a new version of CC-Mail, Version 3.0, in the second half of next year. The new client will be able to access not only the CC-Mail server but also Notes. It will provide a native X-400 implementation — the same one that will be incorporated into Microsoft Corp.'s Mail — and will also be Messaging Application Programming Interface-compliant.

"All you want is file sharing, you don't get LCS, but you get the next version" of CC-Mail, said Dave Marshak, an analyst at Patricia Seybold Group in Boston. Users would have to buy a new client and upgrade the post office as well, but a subsequent move to client/server architec-

ture would not require any upgrades on the client side.

The modular approach Lotus has embraced is similar in concept to the one Novell, Inc. recently outlined at E-Mail World in Boston. With Microsoft's delivery of its Exchange server ever slipping [*CW*, Dec. 12], Novell has seized this opportunity and plans to deliver a GroupWise message store in its next version of NetWare 4.x.

In doing so, it will provide a concept similar to Microsoft's Back Office, where messaging services will be layered on top of the operating system.

All three vendors are delivering these modules in a fashion that will allow them to collapse their directories into X-400- and X-500-based directories, said Jamie Lewis, president of the Burton Group, a consultancy in Salt Lake City.

X-500 is directory is significant for large corporations because it provides a hierarchical naming service. And be-

cause most companies buy their messaging systems on a departmental basis without X-500 in mind, many have a large number of messaging directories to manage. For example, Bank of Boston performed a messaging audit two years ago when it found that it had more than two dozen messaging systems on-site.

Managing magic

The availability of messaging systems equipped with X-500 directories will let companies manage thousands of users from one management console when directories collapse.

In this light, recent announcements are good news for large enterprises. For example, Vinacom, Inc. in New York inherited messaging directories when it acquired Paramount Communications, Inc. and Blockbuster Entertainment Corp. this summer.

While Vinacom is a Notes shop, it has been using Microsoft's Mail as its mail transport. Meanwhile, it garnered CC-Mail systems in the Blockbuster and Paramount acquisitions.

Windows 95

CONTINUED FROM PAGE 1

third-party add-on applications required to enable the Registry database and massive user training.

During the past four months, the Aberdeen Group, a consulting firm in Boston, interviewed 35 corporations with revenues from \$250 million to \$1 billion-plus on their upgrade plans for Windows. Only one organization said it will immediately implement Windows 95, according to Aberdeen analyst Bob Sakakine.

Cost not an issue

Even so, at least a half-dozen Fortune 1,000 shops interviewed last week were sanguine regarding the high cost of mi-

gration to Windows 95. The resulting productivity gains more than cost-justify the price of the extras, they said.

Take Georgia Power Co. in Atlanta, which has 6,000 users. The bill for end-user training and third-party tools to enable the Registry database will total more than \$1 million.

"The costs aren't off-line; it's money well spent since our users will be more productive," said Skip McDonald, the utility's information resources engineer. As a Microsoft maintenance agreement customer, Georgia Power will spend \$40 to \$60 per desktop upgrading from Windows 3.1 to Windows 95, McDonald said.

Jim Lisiak, senior software engineer at Chevron Information Technology Co. in San Ramon, Calif., which has more than 25,000 users, also has no qualms about shelling out big bucks. He said his attitude is that the extra will pay for themselves.

Lisiak calculated that it will cost Chevron information from \$25 to \$34 per desktop to upgrade from Windows 3.1 to Windows 95. Users will receive about eight hours of training at a cost of \$75 an hour.

"No one here is choking at the hill. You can't take a Band-Aid approach to operating-system-level upgrades," Lisiak said.

Some network administrators, while personally expressing reservations

Features grab bag

Networking features embedded in Windows 95 include the following:

- A Novell, Inc. NetWare client relocator that lets users seamlessly share peer file and print services with users on NetWare LANs.
- Support for Network Driver Interface Services 3.1 and Open Data-Link Interface drivers.
- An integrated, remote client backup facility that lets workstation users back up data to Cheyenne Software,

Inc. and Arcada Software, Inc. backup systems for Windows NT or NetWare servers.

- Built-in protocol support for IPX/SPX, TCP/IP and NetBEUL.
- Simple Network Management Protocol agents that let network managers remotely monitor Windows 95 workstations using network management platforms such as Hewlett-Packard Co.'s OpenView.
- A System Policies facility that lets network managers remotely disable any peer service on a Windows 95 workstation, NetWare server or workstation.

—Lewin DADIO

about Windows 95's stability on first release, nonetheless said they would probably go to end-user demand for early installation.

"I'm concerned that it won't be bug-free when it ships. But at the same time, our users are clamoring for it," said Jennifer Sumner, systems coordinator at Barclay's Bank in New York.

Holding out

However, such enthusiasm is by no means universal.

"I'm going to wait to evaluate Nothing Microsoft showed me in its Windows 95 demo gives me any reason to just jump in," said Marion Galuska, manager of MIS at WestPoint Stevens, a home textiles manufacturer in New York.

Sakakine said dozens of other large corporate customers will be content to wait at least six months to a year before migrating to Windows 95.

The large corporate users I spoke with [were] in no rush to upgrade to Windows 95. They cited high support and

training costs as the reason for their reluctance," Sakakine said. "Users are more nervous about a release with '95 at the end, and Microsoft's history is that they get things right on about the third try."

Jay Horowitz, president of Logical Business Systems, Inc., a consultancy in New York, agreed. "I'm recommending to my clients that they not upgrade to Windows 95 initially, although it does have some nice features like the System Policy editor and excellent NetWare connectivity," Horowitz said.

Smaller users argued that the availability of those remote connectivity features and the commensurate cost savings are reason enough to become early adopters.

Senior editor William Brundell contributed to this story.

If at first you don't succeed...

The 32-bit Windows 95 operating system solves two nagging problems that plagued users of earlier versions of Windows.

• **Blank Screen O'Death.** Earlier versions of Windows alternated between real and protot mode, causing workstations to hang. The resultant blank screen was dubbed the "Black Screen O'Death." As a fix, Windows 95 always runs in protected mode. • **Automatic Device Removal.** In older versions of Windows, users would frequently request the wrong driver due to confusing command structures. This meant the program could not locate servers, keeping users off the network. Windows 95 lets network managers visually browse servers and the local disk using a menu that automates the process of locating the correct network drive. This eliminates the onerous task of memorizing arcane command-line syntaxes and server names. —Lewin DADIO

Only One Software Covers Every Desktop Strategy

The SAS® System
The World's Leading Information Delivery System

Windows®? OS/2®? UNIX®?

The debate rages on over which desktop operating system is best. Fortunately, the question of which software to choose has been settled once and for all. All you need is the SAS System.

What's more, the SAS System is portable across all your hardware. Our exclusive MultiVendor Architecture™ lets you integrate different desktop platforms (who says you have to choose?) and share data and applications between the desktop and larger machines. So, while the industry struggles to define a standard operating environment, we've eliminated the need for one.

And cut out the expense of buying—and supporting—all those stand-alone desktop solutions. See for yourself in a free video. Just give us a call at 919-677-8200.



The world's leading information delivery system provides a single, cohesive, and cost-effective solution for virtually any applications request. From executive-level information systems to total quality management systems for the manufacturing floor. Customized interfaces make it easy for anyone—at any level—to gain immediate productivity.

Call Now for a Free Video Introduction

With the SAS System, you can rely on a single software system for Windows and/or OS/2 and/or UNIX and/or any other platform.



SAS Institute Inc.
Sales & Marketing Division
SAS Campus Drive □ Cary, NC 27513
Phone 919-677-8200 □ Fax 919-677-8123

SAS is a registered trademark and MultiVendor Architecture is a trademark of SAS Institute Inc., Cary, NC, USA. Other brands and product names are registered trademarks or trademarks of their respective holders.
Copyright © 1992 by SAS Institute Inc. Printed in the USA.



LEGEND

The war is over. No more howitzer shells

coming at client/server groups from the glass house. No more client/server people lobbing grenades at the MIS staff. Not that peace is always as peaceful as you'd like it to be. Networks going down, bottlenecks popping up, people screaming about applications they can't get to. And a nasty feeling that nobody is really doing anything to help you with any of it. When, in reality, all of us at Legent are doing quite a lot. We've put together the most extensive set of industrial-strength, distributed systems management tools available. We've also developed an open architecture called XPE[™] that lets our software work together across almost anything you can wire together, regardless of function or platform, from mainframes to UNIX servers to PC LANs. Which means you can manage your systems from the platform of your choice, something our customers tell us they're happily doing right now. It's not a silver bullet, but it can definitely help you do your job better. Besides, it's peacetime. Who needs bullets?

ESPN rebounds from communications disaster

By Thomas Hoffman

"March Madness," a term often used to describe the NCAA's annual Division I college basketball tournament, took on a whole new meaning earlier this year at ESPN.

At the height of the tournament, the Bristol, Conn., all-sports cable network

began breaking ground on a new data center. Construction workers inadvertently hit an aquifer while digging a new foundation and water began seeping up the back wall of the data center, where communications lines and power were mounted, started shaking.

Data center employees were not in

danger, but the leak threatened to collapse ESPN's fiber-optic campus communications backbone, which supports the network's core business processing. Also in danger were T1 connections to New York and 56K-byte circuits that link headquarters with offices in Los Angeles, Chicago and Detroit.

"One wall had slid and moved a couple

of inches," said Steve Morovsky, ESPN's director of technical services and telecommunications. After experts were brought in to assess the structural damage, "they decided the building wouldn't be stable for us in the long term," he said.

ESPN, which is available to 63.1 million households, then called in CSC ComputerSource, a unit of Computer Sciences Corp. CSC brought its Provident Mobile Recovery Systems mobile data center to ESPN's campus.

Over the next weekend, ESPN and CSC ComputerSource backed up the programmers' core systems and moved them into nearby tractor trailers, which served as temporary data centers during the six months it took to complete the new facility. The two companies also rerouted ESPN's communications feeds to the trailers.

"It was a controlled disaster. Maybe that's an oxymoron," Morovsky said.

The recovery effort consisted of backing up and relocating two IBM 4381 low-end mainframes that handle the company's core financial processing, a Data General Corp. MV 35000 office automation minicomputer and a DG Avion Unix-based advertising sales system. The old data center, housed in a 40-year-old building, supported ESPN's core business activities, including sales tracking and accounting, and the tape library that contains footage of sporting events.

Little impact on operations

The temporary quarters allowed ESPN to keep its information systems staff and equipment close to its programming and back office employees, Morovsky said. Fortunately, the move had no impact on ESPN's operations or back-office processing. "Our level of service stayed up to its usual levels, and that has to benefit the end users and the company," he added.

It also had no impact on ESPN's advertisers, most of whom were unaware of the construction gaff. "We didn't experience any disruptions in our advertising traffic. In fact, this is the first I'd heard about" the data center relocation, said Steve Grubbs, senior vice president of national television at Omnicom Group's BBDO agency in New York.

ESPN moved into the new data center, which is on the same site as the old building, in late October. Morovsky declined to name the construction firm that hit the aquifer or whether that company shouldered any of the costs for the data center or the recovery.

Although its contingency efforts were well planned, ESPN's successful data center migration proved to be a lucky break for a cable network that has had its share of ups and downs this year. Although the sports network's ratings are up from last year, analysts said the loss of Major League Baseball and National Hockey League games due to player strikes have offset additional ratings and advertising gains the network almost certainly would have made.

Introducing Version 4.0



Emulation

Make a list of everything an emulator should be. Then add a few more lines. With the IBM® Personal Communications/3270 V4.0, you can have it all—and more.

Power and Flexibility.

Now you can access the host mainframe from more locations, more efficiently and with more function than ever before. Running as a native DOS or Windows® application, IBM PC/3270 allows PCs to emulate IBM 3270 display terminals, transfer files with the host, automate process

via the emulator APIs, and function as a LAN gateway. With its wide range of connectivity, IBM PC/3270 is also quite a liberator. There's support for IPX/SPX (NetWare® for SAA®), TCP/IP, and Async support for out-of-office connectivity.

There's also the NEW Personal Communications Toolkit for Visual Basic®, which makes it easier for Windows programmers to integrate host data and text with workstation applications.

Great Support and Savings.

You'll also find all the support you need for the latest technologies, including the latest modems (V32BIS and V42BIS) and PCMCIA credit card adapters. And there are lower upgrade prices when you de-



Take a look at all that PC/3270 has to offer, and you'll see why it's the latest emulation sensation.

beyond expectation.

cide to migrate from non-IBM (Attachmate®, DCA®, Wall Data® etc.) or IBM 3270 terminal emulators. To find out more, call 1-800-342-6672. In Canada, call 1-800-445-7999, ext. 999. With so many features, the PC/3270 is clearly greater than your average emulator.


IBM and SAA are registered trademarks of International Business Machines Corporation. NetWare is a registered trademark of Novell Inc. MC-PCOS and Visual Basic are registered trademarks and VisualBasic is a trademark of Microsoft Corp. DCA is a registered trademark of Digital Communications Association. Inc. Attachmate and Wall Data are registered trademarks of their respective companies. © 1994 IBM Corp. All rights reserved.

24 time zones.
4,300 stores.
55,000 employees.
50 million customers.

And one
extraordinary
company
tracking it all.

**Sprint Technology Helps Achieve
Growth For BLOCKBUSTER.***

*It takes a company with experience,
vision and commitment to handle the
network requirements of the world's
largest video retailer.*

*That company is Sprint. With Sprint's
Managed Network Service, Blockbuster
Entertainment gets a revolutionary
turn-key solution that combines every-
thing from network design, software and
hardware, to installation and 24-hour-a-
day network monitoring. All working
together using frame relay to link more
than 40 LANs across the country into
one. So when Blockbuster needs up-to-
the-minute information on sales,
distribution or payroll, the answer is
ready and waiting.*

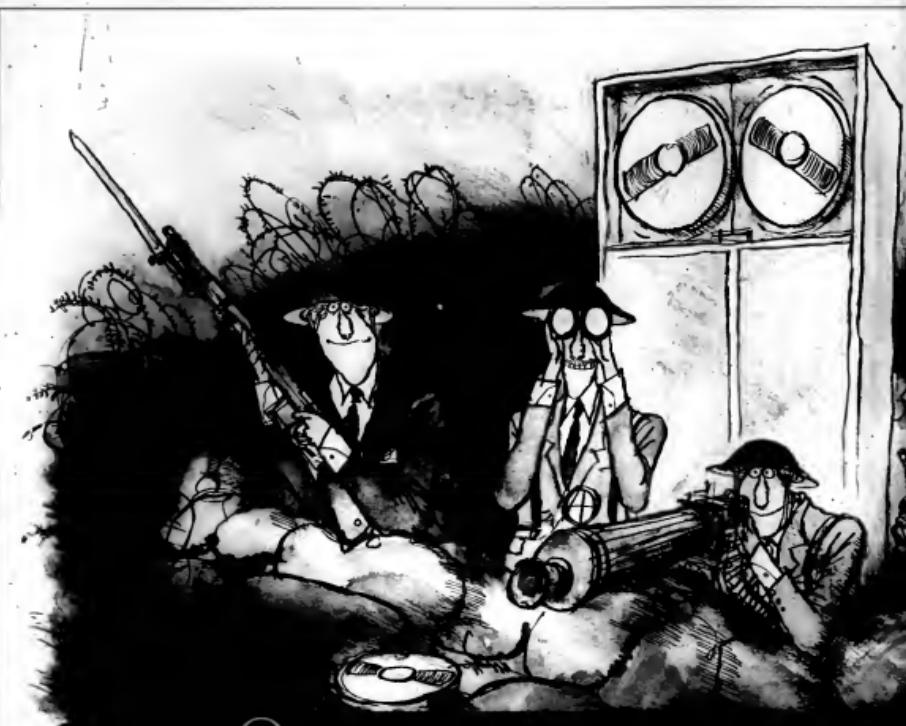
*And, since it's all managed by Sprint, the
network can expand with Blockbuster's
business - without the need to retrain
personnel or change systems.*

*Which leaves Blockbuster free to do
what it does best: Keep the world
entertained.*

*Now, if we can do this for Blockbuster,
imagine what we can do for you. To
find out more about Managed Network
Service and how Sprint can help your
business do more business, call us
today at 1-800-669-4700.*



Sprint.
Business



ORACLE WANTS YOU TO GET RID OF THE MAINFRAME. MAY WE SUGGEST THE ONLY REAL

It's time for you to fix bayonets. And hold the line on your mainframe.

Oracle's desire stems from a fundamental deficiency in its system architecture. Theirs was never designed to integrate the mainframe. No migration strategy there.

But Sybase's was — from the start. We've been building solutions to leverage the mainframe for ten years.

With SYBASE[®], old mainframes never die. They just lose their limitations.

IT'S A CLIENT. IT'S A SERVER.
IT'S WHATEVER YOU
NEED IT TO BE.

Architecture is the key to interoperability. With Sybase's truly open architecture, your mainframe is more valuable

today than it has ever been before.

Suddenly the mainframe plays so many more roles. It's a great data warehouse. Its processing speed makes it a very powerful server. And it's a client, too. For instance, a mainframe-based application can access a UNIX database, just as though that database was on the mainframe.

With Sybase's Enterprise CONNECT™



IF YOUR MAINFRAME, SONABLE RESPONSE.

interoperability products, you can get data in and out of the mainframe without violating the security or business logic you rely on. So you can safely give read/write access to more users, to handle more transactions, at PCs and workstations throughout your enterprise.

That's what true interoperability is. Oracle's capabilities are clearly no match.

BIG COMPANIES LEVERAGE THEIR BIG IRON:

700 of the Fortune 1,000 have integrated their mainframes with SYBASE. With Sybase's best-of-breed products, they know that whatever they wish to integrate can be integrated. Open architecture gives them the flexibility to allow

changing business needs to drive their computing — not the other way around.

If your business is anything like theirs, you need your mainframe too.

As for those who would tell you otherwise, give them their marching orders.

WHAT THE CUSTOMERS SAY:

"When I hear people talk about getting rid of the mainframe, I know they don't understand my business. For us to be successful, we need to maximize all of the computing resources available to us. That means connecting desktop workstations, LAN-based servers, and the mainframe into a seamless and powerful information enterprise. Sybase's Enterprise CONNECT has enabled us to do just that."

— Bob Thompson, Supervisor of Database Administration at Towers Perrin, an international management consulting firm

"Sybase enables us to offer a new standard of client applications which leverage our existing mainframe databases. Our clients are experiencing dramatic increases in user productivity along with reduced application development time on our part."

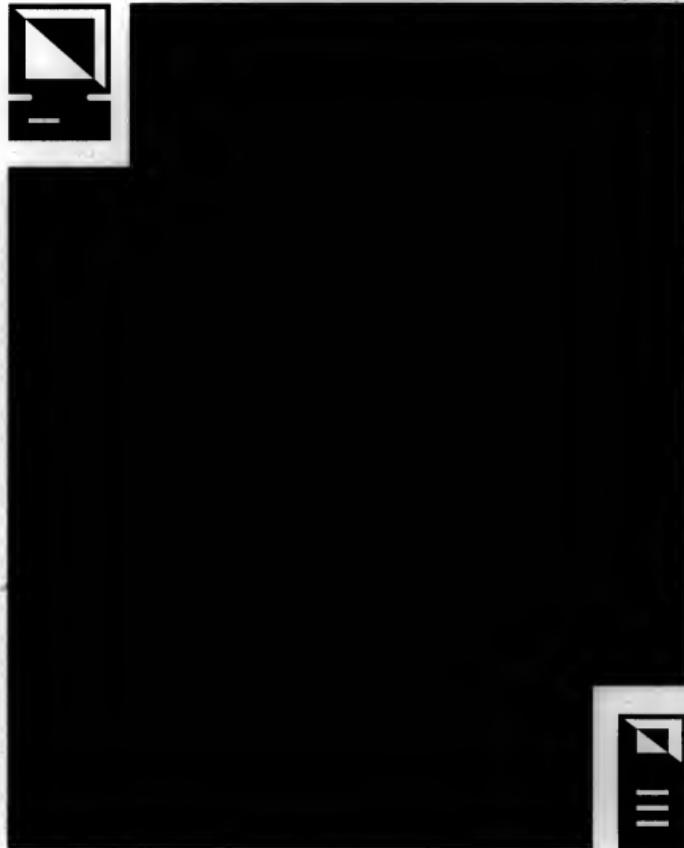
— Ken Carballido, Director Open Data Streams at First Data Resources, the world's largest third-party processor of credit and debit card transactions.

To get a free copy of our new brochure, "Client/Server Solutions for the Mainframe," call 1-800-SYBASE-1, ext. 6610.



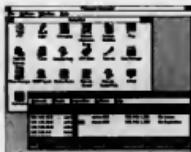
SYBASE
THE ENTERPRISE CLIENT / SERVER COMPANY

WHY IS INTEGRATING YOUR PCs SUCH A PROBLEM?



WE HAVE

You see, we have a short-cut through the maze. It's the SolarNet™ suite of PC networking software combined with the Solaris™ operating environment. Together, they provide information to PC users in their local Windows environment—even if the information



Run sophisticated network applications right from your Windows desktop.

Here's how it works. SolarNet is a full suite of PC networking software. Solaris is our powerful enterprise operating system environment. The combination lets you connect multiple LANs with the most popular networking protocols, like TCP/IP and NetWare. If you're interested in performance (and who isn't), you'll be pleased to know you can count on Solaris to let you harness

is scattered across the organization.

the power of the new high performance, multiprocessing x86 and Pentium™ platforms. So you can offer network users the capabilities they need to run their favorite databases, like Oracle®, Sybase® or Informix®, or other applications, just as hard and fast as they'll go. And, because SolarNet is built on the Solaris operating system, your data is always available and accurate, even though it's distributed on multiple systems throughout your organization. Our SolarNet and Solaris combination

can even boost the performance of your network managers.

It easily integrates into your present environment, so you don't have to replace existing applications, hardware, or people. Thanks to our Windows adminis-



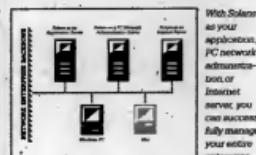
Solaris speaks Oracle, Sybase and Informix, to name a few. Darnit!



NO IDEA.

tration, installation and configuration tools, you can make changes to the network quickly, right from a Windows desktop.

All of which lowers your cost of ownership dramatically. It also doesn't matter how large your networks are, or how many of them you're managing. SolarNet with Solaris is scalable to thousands of users. And everyone can have all kinds of access—file, print and resource sharing, even remote



access—right from their Windows desktops. And if you need

Internet access for your networked PCs, we've got a Solaris server that can handle that, too. But only if you say so. SolarNet and Solaris both



Solaris. The best application and database platform.

give you stringent data security features, along with the peace of mind that goes with it. Users have the flexibility to access their data from any PC in the network, provided they meet your login criteria.

The solution is a prime example of our experience integrating diverse networked environments. And that makes it a proven foundation for your mission critical applications. We know. We've had to do it for ourselves. To learn more about our shortcut through the PC integration maze, reach us at 1-800-SUN-SOFT, or on the Internet at <http://www.sun.com/>



Solaris and SolarNet. The best combination for all your PC servers.

 **SunSoft**

Oracle and Solaris are registered trademarks of Oracle Corporation. Sun and Solaris are registered trademarks of Sun Microsystems, Inc. SunSoft is a registered trademark of SunSoft International, Inc. All other products or services mentioned herein may be trademarks of their respective owners.

SIM puts hope at children's fingertips

Movie inspires inner-city computer center

By Julia King

The idea of launching a computer learning center for poor, inner-city youth came to Michael Evans in the weeks after he saw the film *Boyz 'n the Hood*. Its graphic images of violence and abject poverty haunted the then-newly elected chairman of the Northern California chapter of the Society for Information Management.

"What really struck me about the story is how kids in the ghetto have no positive role models and no way out," Evans said recently.

About the same time in late 1992, Evans, who is director of emerging technologies at Pacific Bell in San Ramon, Calif., was also shopping around for a central issue on which he could focus as SIM chairman. A friend referred him to East Oakland, Calif.'s Temple Alien Baptist Church and its Interface Institute, which offers inner-city students extra help in math, science and English in a fenced-in complex of low buildings in the gritty heart of crime-ridden East Oakland.

Program's heroes

The rest, according to Andren Silvey, the institute's executive director, is history — a history she likes to tell over and over.

"Michael really got everything going. He has been our champion and the hero of our computer program," Silvey said.

"Technology doesn't discriminate. It may do a lot of other infuriating, unnerving things, but it doesn't discriminate."

— Michael Evans,
Chairman, Northern
California SIM
chapter

the two-hour computer program each evening. There are no computer training classes at his school.

"There is a keyboarding class, but I take a study hall instead so I can finish my homework and come here," Baldwin explained.

In order to participate in the computer program, students must sign up at Oracle Interface, the two-hour after-school

program in math, science and English. The program is offered at the Temple Alien complex and at four middle school sites "because it's safer for kids to stay at schools near their homes instead of coming to the center," Silvey explained.

Once a week, however, the off-site students come to the computer center where they use PCs to work on math, science and English homework. Instructors are education majors from the University of California at Berkeley, San Francisco State University, and Laney College and Merritt College, both in Oakland.

"They work so much more independently with computers, and it gets no quiet," Silvey said. "They work through problems they used to ask their teachers about. The key to everything we teach is computer literacy. That's why before the computers, I felt I was only bringing them half a meal."

In keeping with the program's guiding principle of "each one teach one," students in the institute's computer program also plan to return within a year after graduation to help others just starting out.

So far, about 40 middle school and junior high school students have partici-

pated in the program, which includes training in DOS, Windows, C++ programming and WordPerfect word processing software.

Silvey said the program could always use more hardware, especially PCs, to expand its scope. But her greatest wish for the center is for computer professionals to come to East Oakland and share their "real-life experiences" with students looking for a way out through technology.

"Volunteers are always greatly appreciated," she said.

For more information, contact the Interface Institute, 8500 A Street, Oakland, Calif. 94621 or call (415) 635-1755.



Ernie Baldridge, 12, rearranged his schedule and priorities to make time to attend the center

Clients wary of Oracle information highway hype

By Thomas Hoffman
NERVOURSE

A dozen of Oracle Corp.'s largest financial industry customers recently packed a hotel ballroom here, anxious to learn more about the vendor's plans to help them deliver financial services capabilities over the information highway.

Unfortunately, the 100-plus attendees got little more than a lively demonstration from Oracle Chief Executive Officer and President Lawrence J. Ellison of the company's forthcoming Oracle Media Server, a multimedia library designed to manage and deliver text, video and audio to thousands of simultaneous users.

The forum fell far short of detailing how the Redwood Shores, Calif., database giant plans to deal with critical issues such as network security that are of great concern to Wall Street technologists.

"There are still legitimate concerns about data security that are preventing companies from conducting business over the Internet," said Atul Srivastava, a systems analyst at Andrew Davidson & Co., a New York

fixed-income consultancy. The company does use the Internet to download customer data for analysis, but Srivastava said the World Wide Web is still too insecure to use for routing proprietary customer information.

How does it help?
Other attendees said they were uncertain how Oracle Media Server, which Ellison claims will provide consumers with movies on demand, might fit their organizational needs.

"It's all talk right now. We'll see what the product looks like and then decide if there's applicability," said Vinayak Chintaparti, a systems architect at Merrill Lynch & Co.'s institutional sales division.

For his part, Ellison said Oracle Media Server will be available to business customers in March through Oracle



Oracle CEO Lawrence J. Ellison hosts partnerships with regional Bell operating companies

and telecommunications partners such as Bell Atlantic Corp., BellSouth Corp. and US West, Inc. He noted that Oracle has formed partnerships with six regional Bell operating companies in an effort to leverage the high-bandwidth capabilities of their Integrated Services Digital Network (ISDN) technologies.

ISDN services typically cost \$20 to \$40 per month, depending on location, he noted.

Ellison added that the necessary hardware for video capabilities on midrange PCs should cost customers about \$1,800 per desktop. Set-top boxes from Oracle partners such as Apple Computer, Inc. and Scientific Atlanta, Inc. will drop from \$500 to \$300 next year, he said. Oracle's Media Objects, a multimedia application development tool, will cost \$500 per server copy.

Video browser

Oracle plans to integrate midrange PCs, ProShare videoconferencing hardware with its Oracle Media Server package, said Oracle President and CEO Lawrence J. Ellison.

DIGITAL

Update

DECEMBER 1994

HIGHLIGHTS

In this issue, get the latest on special offers and product and service news along with details on Digital business solutions that are right for you.

The world on AlphaStation products
Uniting the power of workstations with the flexibility and industry-standard design of PCs

Windows NT running on Alpha systems
Offering the features and performance required for the most demanding computing tasks

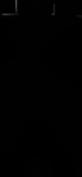
Details on Multis
Pointing the way to higher business productivity

HINote notebook computers
The slimmest, most full-featured notebook available on the market today

Digital's AlphaServer family
Power and performance for critical business applications

New channels strategy
Channels partnerships yield broader choice for customers

Digital's UNIX is the talk of the town
The DEC OSF/I operating system is a full-featured, high-performance commercial UNIX offering



Digital's AlphaStation systems combine the best features of the PC and workstation

Uniting the best features of two worlds, Digital recently unveiled AlphaStation workstations that combine the power of workstations with the flexibility and industry-standard design of their PC cousins.

The three new members of Digital's 64-bit family are the AlphaStation 200 4/166 and AlphaStation 200 4/233 desktop systems and the AlphaStation 400 4/233 mini-tower model. The new systems are designed for a range of uses, including mechanical computer-aided design, electronic design automation, and software engineering.

Digital's AlphaStation workstations offer the high performance, expandability, and high-quality service commonly associated with larger systems. We have married those capabilities with the benefits typical of small systems, such as premium price/performance, three-year hardware warranties, and open, low-cost PCI and ISA I/O options.

The AlphaStation 400 4/233 system has a mini-tower system enclosure that offers flexibility for storage and use of options. Two PCI, one PCI/ISA, and three ISA slots, as well as five storage bays, are available. Daughtercard upgrades are designed to accommodate future CPUs.

All AlphaStation workstations offer a choice of three factory-installed operating systems — DEC OSF/I, OpenVMS, and Microsoft Corp.'s Windows NT workstation software. And, because they provide both PCI and ISA buses, a wide range of industry-standard options can be added.

Digital asserts that the AlphaStation 200 4/166 system provides the best UNIX performance in its price range. We're also predicting that the industry will make this system the platform of choice for compute-intensive Windows NT applications such as technical publishing, software engineering, mapping, multimedia, visualization, and CAD.

At announcement time, the AlphaStation 200 4/166 workstation was more than 70 percent faster than the IBM 23T, and 79 percent faster than competitive systems using the 90-MHz Pentium processor. For users of OpenVMS workstations, the AlphaStation 200 4/166 system promises dramatic performance and price/performance improvements.

Another new workstation, the AlphaStation 200 4/233 system, offers best-in-class graphics performance with a range of 2D and 3D choices, and support for third-party graphics options. And for most applications, this model speeds execution response times. Chip-level upgrades are designed to handle future CPUs.

For more information on AlphaStation products, call Digital's factsheet fax service at

1-800-723-4431

digital

Windows NT V3.5 runs well on Alpha Systems

The Windows NT operating system from Microsoft Corp. — which runs on many Digital Alpha systems and Intel-based PCs — offers the features and performance required for the most demanding computing tasks, yet is versatile enough to run most popular personal productivity tools.

The latest version of Windows NT, Version 3.5, which was released in September, eclipses earlier releases with better performance and expanded capabilities.

But no matter what features or speed the enhanced Windows NT operating system provides, it won't meet your business needs unless it's coupled with a hardware platform that delivers the peak power and performance required to run mission-critical applications. Digital's new AlphaStation and AlphaServer systems provide that platform.

In addition to making performance improvements and adding new features in Windows NT Version 3.5, Microsoft clarified the positions of its Windows NT offerings by renaming them Windows NT Workstation V3.5 and Windows NT Server V3.5. The products were formerly known as Windows NT and Windows NT Advanced Server.

Microsoft said its two Windows NT offerings are optimized for usage with either a workstation or a server but share a common system architecture. The workstation version provides the power of a workstation with the ease of use, productivity, and compatibility of a PC, while the server version delivers the networking capabilities required to run the new generation of business applications.

"Windows NT is the foundation that combines unprecedented power with the unmatched ease and simplicity of Windows, and it works with the information systems that companies use today," said Jim Alchin, vice president, Microsoft Corp.'s business systems division. "This allows customers to build and easily manage comprehensive, reliable business solutions on low-cost PC hardware."

Microsoft said Windows NT V3.5 builds upon its predecessor, V3.1, to greatly enhance speed, reduce size, and provide greater connectivity to other systems, particularly Novell NetWare and UNIX environments. Indeed, tests performed by Digital using the beta version of Windows NT V3.5 running on Alpha systems showed:

- A four-to-eight-MB reduction in memory requirements
- An 88 percent improvement in 16-bit application emulation performance
- A 20 percent improvement in TCP/IP over the previous release

These AlphaStation and AlphaServer systems running Windows NT Version 3.5 enable you to run your most critical applications in a low-cost, open client/server environment.

GE Plastics selects Alpha and Windows NT for move to open client/server computing

The Structured Products Division of GE Plastics, with locations in Pittsfield, Massachusetts, and Mt. Vernon, Indiana, is one of many organizations that will benefit from running its mission-critical applications on Alpha systems with the improved Windows NT operating system. A leading developer, manufacturer, and marketer of engineering plastics, GE Plastics' Structured Products Division selected an Alpha platform running Windows NT for its move to client/server computing in 1993.

"We moved to the client/server environment to lower our costs," said Ron Giles, principal engineer and information manager for the Structured Products Division. "The cost for high-performance CPUs on a client workstation is much lower than paying for much higher CPU usage on a mainframe."

Implementing Windows NT on Alpha systems enabled GE Plastics' Structured Products Division to streamline its operations from order entry to customer delivery, including reducing the time it took managers to retrieve information from three days to the length of one shift.

"The individuals within our business have become much more productive," Giles said. "They have been able to provide some of their time and resources to do other things, which gives us better productivity in other areas. Our customers definitely are seeing a faster turnaround on their orders."

Windows NT V3.5 supports the new AlphaStation and AlphaServer systems as well as the existing DECpc AXP 150, DEC 2000 Models 300 and 500, and AlphaServer 2100/4/200 machines. This support extends from PCs through symmetric multiprocessing (SMP) servers.

Multia points the way to higher productivity

Digital has developed what it calls "a multi-pointed strategy" that integrates multiple desktop environments with integrated management and administration from a single desktop. The Multia MultiPoint Desktop Device enables you to easily access DEC Workstations, Windows NT, UNIX, SuperVME, and Intel-based systems. Moreover, it provides full compatibility with the ability to integrate and manage multiple systems and applications from one desktop system.

The Multia option is based on a PC-3200 Alpha CPU running the Windows NT Workstation Version 3.0 operating system, a SuperVME graphics card, a keyboard, mouse, monitor, and integrated desktop management software. This device boosts user and workplace productivity by providing easy

"multi-pointed" access to key network data sources for about 1000 concurrent users all from one desktop and network settings.

As a member of the emerging "power desktop" class of open client/server systems, the Multia MultiPoint Desktop Device offers a broad range of integrated desktop management, security, and networking options, said David Gosselin, manager of the Multia Desktop Group in Boston.

"In line for a new generation of desktop computing platforms for enterprise IT users to support a new generation of applications," he said. "The Multia desktop is a parallel development to the Multia server desktops, as defined by Digital's Multia, to fit new Multia."

The Multia MultiPoint Desktop device adds significant value to the Windows NT Workstation Version 3.0 operating system. By year-end next year, in six different computing spaces under any network conditions.

Jim Alchin, vice president, Microsoft Corp.'s business systems division, said the Multia device, "an innovative implementation of Windows NT for heterogeneous environments."

Digital's new line of HiNote notebook computers travels light and loaded

Digital's new HiNote line of notebook computers redefine the way you interact with your computer. How? You could say we broke the mold when it comes to designing the lighter, slimmer, most full-featured notebook available on the market today.

The new Digital HiNote and HiNote Ultra provide elegant, no-compromise mobile computing to PC users on the move. Both offer a sleek travel-friendly design, with an innovative built-in trackball, PCMCIA for expandability, zero footprint disk drive (HiNote Ultra), and sculpted keys that let fingers fly.

Superior performance and reliability, at a competitive price, complete the package.

No-sacrifice computing

Unlike other notebooks available today, the Digital HiNote and HiNote Ultra are the first to bring "no-sacrifice" computing features to the mobile marketplace. With both, you get full features in a small form factor. Digital has

actually created a new class of notebooks known as "Ultra Portable."

Weighing in at a light 4.0 pounds, the HiNote Ultra packs an Intel 486 DX4 75-MHz processor and the latest in long-running battery technology. Its screen and keyboard are full size, and it has on-board business audio and infrared for wireless communication. Plus, it comes loaded with the following software:

- MS-DOS 6.22
- Windows for Workgroups 3.11
- Microsoft Sound System
- Windows-based Setup and Power Management Utilities
- CardView PCMCIA Utilities
- Lotus Organizer
- Puma TranXit Communications Software (IR)
- Compuserve
- Delphi InterNav Internet Navigation S/W
- Second Screen Screen Saver
- Official Airline Guide Flight Disk

shortcomings. It isolates the internal interoperability features of Windows NT to maximize the benefits of Windows and UNIX applications."

Positioned as a competitor to PC servers and UNIX servers and workstations, the AlphaServer product portfolio now includes networking protocols (TCP/IP, IPX/SPX, LAN Manager, NetBEUI, NetBIOS, PINGMP), TCP/IP, and DECnet protocols. It also offers simplified access to the Internet through the 25-MHz Mezzo graphical Web browsing software. In addition to its Alpha processor, the Alpha Server 2000 workstation series includes many standard components that can be sold as options on PCs. These include:

- ThinWire, thick-wire, and twisted pair Ethernet connections
- PCI-based graphics adapters
- Multi-media hardware with 16-bit quality sound
- 24-MHz processor, expandable to 32-MHz
- Industry-standard PCMCIA and PCI option slots for multimedia and network expansion

Available through Digital and our authorized resellers and selected distributors, the Alpha Server 2000 Workstation division is now shipping in four clustered configurations.

That means you can write, think, plan, propose, compute, and communicate — on the road, at your client's conference room, or anywhere you and your computer need to be.

System options galore

The Digital HiNote family is complemented by a range of system options including fast/modems, Ethernet and Token Ring network connectors; SCSI cards; hard-disk storage cards; and 16-bit sound cards that are fully tested with the HiNote line and warranted to be fully compatible. All Digital-branded and third-party PCMCIA cards, as well as other options, are easy to add and remove since these notebooks feature Plug and Play Flash BIOS and are Microsoft Windows 95 ready.

Digital HiNote and HiNote Ultra are covered by Digital's worldwide three-year limited warranty. Plus, our Passport service — providing 7-day, 24-hour, toll-free phone support and 48-hour repair and free courier pickup and delivery service — is available free of charge for the first year in the U.S. (expiring in other countries).

For more information on Digital's HiNote and HiNote Ultra mobile computers, call

1-800-722-9332

AlphaServer products add on advantages of small systems

In an increasingly competitive and rapidly changing business climate, your organization demands that your support systems do more — and that they do it faster and at less cost. Digital's AlphaServer family, which recently grew with the addition of several new members, does that with more power and performance for critical business applications.

We've also expanded our Advantage Upgrade program with very cost-effective upgrades to these new systems. We've made it very easy for you to trade your existing systems toward the purchase of a new Alpha system.

AlphaServer products: You asked, we answered

New to Digital's product family are the AlphaServer 1000 4/200 and the AlphaServer 2000 4/200 workgroup and small business servers; the AlphaServer 2100 4/275 departmental servers; and the DEC 7000 Model 700 enterprise server. The Digital 2100 Server Model A500MP system has been renamed the AlphaServer 2100 4/200 system.

Our new AlphaServer family is optimized to support large numbers of users while providing high availability, I/O connectivity, and aggregate I/O bandwidth. Plus, we're backing it with a three-year, on-site hardware warranty.

"All of Digital's AlphaServer products incorporate the features users have been requesting," said Pasoline Nini, vice president of the systems hardware group. "The common I/O bus helps ensure access to third-party options. That feature, combined with the choice of running DEC OSF/1, OpenVMS, or Windows NT server software, will give users and business partners confidence in investment protection."

Nini added that Digital has targeted small businesses with our AlphaServer 1000 4/200 system, a workgroup server for database, PC LAN, communications, or other departmental applications. "Its reliability features combine with its simple management features to make the AlphaServer 1000 system ideal for organizations with little or no MIS support," she said. "Business-critical applications can run unattended, and the management features provide early indications of potential system problems. Also, because it's designed for compatibility with future generations of Alpha AXP chips, the server is easily upgraded for even higher performance."

Take advantage of entry-level multiprocessing

We are basing on our "entry" multiprocessing system — the AlphaServer 2000 4/200 system — to introduce lower-cost, 64-bit computing to smaller businesses that can benefit from the high level of performance. Featuring symmetric multi-

processing (SMP), the AlphaServer 2000 system is ideal for applications such as finance, database, and office automation.

The AlphaServer 2100 4/200 system, formerly known as the Digital 2100 A500MP system, was the first Alpha server built around the PCI I/O bus. We view this product, introduced earlier this year, as our "leadership" server system.

The new AlphaServer 2100 4/275 system shares the characteristics of the original Digital 2100 server system but adds significantly increased performance through the 275-MHz Alpha processor. At announcement time, the AlphaServer 2100 4/275 delivered up to twice the speed of the HP 170 for the same price, and up to 50 percent more performance than the Sun SPARCserver 10000 and IBM 594 at two-thirds the price or less.



AlphaServer 2000 4/200

Introducing the DEC 7000 Model 700 system

Our highest-performing, most expandable server is the DEC 7000 Model 700 system — "the mainframe alternative" designed to give you unprecedented response time in transaction processing, database access, simulations, or file serving.

Winner of AIM Technology's 1994 Hot Iron Awards for UNIX computer systems — "best of" category for multiuser, shared systems — the DEC 7000 is based on the 64-Bit Alpha architecture. The DEC 7000 Model 700 system, which is a follow-on product to the current DEC 7000 Model 600 offering, incorporates the 275-MHz Alpha 21064A chip and runs both the DEC OSF/1 and OpenVMS operating systems.

The DEC 7000 Model 700 can carry your business into the next century, providing unprecedented response time for transaction processing, database access, simulations, file serving, and new technologies such as multimedia and object-oriented applications. It easily supports large files up to 32 GB, and file systems let large organizations resize — enabling applications to grow as your business grows. With VAX 7000 Model 600 and VAX 7000 Model 700 systems, you can also upgrade to DEC 7000 systems through a simple board upgrade.

For more information on AlphaServer products, call Digital's InfoFax for service at

1-800-723-4431



AlphaServer 1000 4/200

System	AlphaServer 2000 4/200	AlphaServer 2000 4/200	AlphaServer 2100 4/200	AlphaServer 2100 4/275	DEC 7000 Model 700 AXP
Number of processors (SMP)	1	Up to 2	Up to 4	Up to 4	Up to 6
I/O	Up to 20	Up to 400	Up to 650	Up to 850	Up to 1,350
SPICeCore_1x16	125.3	118.9	118.9	176.5	180.0
SPICeCore2	139.0	126.7	126.7	209.1	209.9
SPICeCore_low_16	2,944.0	Up to 3,436	Up to 16,677	Up to 15,228	Up to 22,368
SPICeCore_low_2	3,151.6	Up to 5,778	Up to 11,315	Up to 15,470	Up to 24,755
PCI slots	2 PCI, 1 EISA PCI/ISA/PCI	5 PCI, 2 EISA	5 PCI, 2 EISA	3 PCI, 2 EISA	9-slot Pentium+
Maximum I/O bandwidth	192 MB/s	320 MB/s	532 MB/s	532 MB/s	400 MB/s
Maximum memory	512 MB	640 MB	2 GB	2 GB	14 GB
Maximum external storage	14 GB	16 GB	32 GB	32 GB	56.5 GB

More sales channels open for business

Digital's rollout of new AlphaStation and AlphaServer systems coincides with our expanded efforts to sell more products through our channels partners.

This plan to increase indirect sales of Digital products will benefit you most by giving you a broader choice of purchasing options and adding value to the products and services you buy.

Enrico Pesatori, general manager of Digital's Computer Systems Division, said, "We are working closely with our partners to ensure that any customers who want to purchase a Digital product can do so easily and cost-effectively regardless of where they buy."

"Customers will receive the best that both Digital and its partners have to offer," he added. "Together, we will provide our customers with solutions that will meet their needs."

To encourage growth of indirect sales of Digital products, we are taking steps to make it more attractive for organizations to conduct business with channels partners and for the partners to sell Digital products. For example, Digital designed the new AlphaStation and AlphaServer systems as low-cost, high-performance workstations and servers that incorporate the industry-standard PC features that customers want today. And we are now selling these products to channels partners at very competitive costs.

"We are focusing on ensuring customer satisfaction for organizations planning to work with or already working with channels partners while enhancing support for the partners themselves," said Harold D. Copperman, president, the Americas, Digital's Computer Systems Division.

To get the word out to you, our customers, and to help our channels partners boost sales, we're also instituting joint marketing and sales incentive programs for partners and offering them comprehensive training and support.

DIGITAL

Update

D E C E M B E R 1994

Digital's UNIX is the talk of the town

If you want to hear some rave reviews about the DEC OSF/1 operating system, just talk to the analysts. Listen to what developers have to say. Or go straight to the customers. The consistent message in the marketplace? DEC OSF/1 is a top-tier UNIX offering.

Naturally, we believe that DEC OSF/1 is the best UNIX offering around. But you don't have to take our word for it. Simply take a look at the buzz among UNIX analysts.

"True to its heritage, Digital has managed to engineer its way to a full-featured, high performance commercial UNIX offering," stated the Yankee Group in May 1994.

According to D.H. Brown Associates in June 1994, "DEC OSF/1 represents a new generation of commercial UNIX, with good functionality, efficiency, modularity, and plenty of room for growth."

Jonathan Eunice of Illuminata was even more succinct: "Digital has the best file system in UNIX, bar none." (*Digital News & Review*, October 19, 1994).

A wide range of business-critical UNIX applications are here today. Industry confidence in Digital's UNIX offering — coupled with customer acceptance — has played a major role in the dramatic growth in applications ported to this powerful operating system in less than two years' time.

In March 1993, approximately 100 DEC OSF/1 applications were shipping; today more than 3,000 are available. Independent software developers continue to port and ship commercial applications that target areas including database, CASE, accounting and business communications, education, media, finance, health, and professional services. Available technical computing applications include CAD/CAM/CAE, finite element analysis, computational fluid

dynamics, high-energy physics, computational chemistry, molecular modeling/structural analysis, and simulation.

And with the recent announcement of Digital's latest AlphaServer and AlphaStation products, DEC OSF/1 — the only 64-bit UNIX offering available in the industry — has grown increasingly popular.

Beartriz Infante, vice president of the Open Systems Division at Oracle Corporation, explained that Oracle products for Alpha are tuned to take full advantage of Digital system features including powerful symmetric multiprocessing (SMP), 64-bit addressing, and clustering capabilities. "We have seen a significant increase in sales of the Oracle for Alpha product line this year, on both the OpenVMS and (respectively) DEC OSF/1 platforms, and anticipate the trend to continue with the newly announced Alpha products," she said.

Sybase, Inc. agrees. "We view the new AlphaServer line as a high-performance, cost-effective platform for our Sybase System 10 database software," said Judith Whearey, Group Manager.

"This scalable new range of servers offers solid reliability and availability features and the SMP capability in DEC OSF/1 V3.0. The AlphaServer product will become a popular choice with our customers."

Talk about high standards

Not only does Digital's DEC OSF/1 operating system offer you clustering, high availability, and scalability features, but it has also achieved the highest SPEC 1170 conformance among the leading UNIX system vendors — with 97.5 percent of the specified APIs present. These numbers reflect our commitment in standards adherence and bring us closer to our goal of being fully compliant.

SPEC 1170 is now known as the UNIX interface for XPG4 and represents "the single specification for UNIX."

Plus, with the introduction of Digital's new AlphaGeneration systems, businesses are also taking advantage of cost of ownership benefits that result from migrating today to a 64-bit Alpha platform running DEC OSF/1.

"True to its heritage, Digital has managed to engineer its way to a full-featured, high-performance commercial UNIX offering."

The YankeeWatch Commercial UNIX: This Time We Mean Business
The Yankee Group
Boston, May 1994

G.O.D. selects the team of Alpha and DEC OSF/1
Guaranteed Overnight Delivery (G.O.D.) expanded its freight delivery revenues by 40 percent last year. As a result, it needed to add speed, flexibility and room for growth to its entire information system. G.O.D. selected Digital's 64-bit AlphaServer 2100 4/200 systems running DEC OSF/1. "We didn't want to just buy a box for today; we wanted to get something that would last into the future," said Mike Irwin, Chief Information Officer. "At least half a dozen times this week, I've heard people say 'the computer is too fast.' The speed amazes them. I thought I'd never hear that in my career. We definitely bought the right box."

For more information on Digital's 64-bit UNIX offering,

CALL 1-800 DIGITAL
(1-800-344-4825) and reference JJJ.

digital

The following are trademarks of Digital Equipment Corporation: Alpha, Alpha AXP, the AlphaCommons logo, AlphaServer, AlphaStation, Caldera, DEC, DECnet, DECnet+, DECnet++, Digital, the DIGITAL logo, Illumina, Insignia, Insignia logo, Insignia, Max/UX, Minix, OpenVMS, PDC/PDCOS, True64, VMSware, and Vortex. Compaq is a registered trademark of Compaq Computer, Inc. Intel is a trademark of Intel Corporation. Lotus is a registered trademark of Lotus Development Corporation. Microsoft, MS-DOS and Windows NT are registered trademarks and Windows NT is a trademark of Microsoft Corporation. Novell is a trademark of Novell Computer Systems, Inc. Oracle is a registered trademark of Oracle Corporation. OSF/1 is a registered trademark of Open Software Foundation, Inc. UNIX is a registered trademark in the United States and other countries. Source: Comshare, Inc.

Computer Industry

Briefs

Novell sees red

Novell, Inc.'s fourth-quarter profit plummeted 31% last week while profits for fiscal year 1994 plunged 80%. After recurring merger and restructuring charges, net income for the quarter was \$20 million, down from \$105 million for the same period last year. Net income for fiscal year '94 was \$207 million compared with \$11 million last year.

Cabletron all smiles

Cabletron Systems, Inc. reported record earnings for its third fiscal quarter. Sales rose 34%, to \$210 million, compared with the same period last year, and the hub maker recorded a net profit of \$4.1 million, or 56 cents per share.

Japan opens up

The Semiconductor Industry Association (SIA) reported that the foreign share of Japan's semiconductor market hit an all-time high of 25.3% in the third quarter. The SIA credits two U.S./Japan semiconductor trade pacts signed in 1989 and 1991 for opening up the Japanese market. In 1995, foreign share of Japan's chip market was 8.5%.

Patents exchanged
Compaq Computer Corp. and Gateway 2000, Inc. last week cross-licensed their PC patents for a period of five years. They declined to provide exact terms of the nonexclusive agreement and payment details. Currently, Compaq has more than 275 patents with more than 300 pending.

Bachman's back up

Responding to a contrary report on the Dow Jones News Service, Bachman Information Systems, Inc. issued a statement "reaffirming" progress in its transition plan to play in the client/server market. As evidence, Bachman listed \$5.3 million in private equity financing and a recently awarded \$4 million line of credit.

Future looks bright for Ingres

Users shed concerns as CA cuts prices, ups visibility and enhances database

By Thomas Hoffman
and Kim S. Nash

What a difference six months can make.

When Computer Associates International, Inc. acquired The ASK Group, Inc. in June, users of ASK's Ingres relational database were highly skeptical that CA would continue investing in Ingres technologies. Abetting those concerns were reports shortly after the acquisition that ASK employees were being booted from CA's payroll like children from a burning schoolhouse.

Whipping those into action, CA took some big steps to douse the flames. For example, it cut CA-Ingres pricing by 40% to 60% in September and enhanced the relational database management system with previously unplanned features such as partial backup and recovery and data compression.

CA also pumped new life into Ingres under a \$30 million worldwide ad campaign that kicked off earlier this quarter

While users and analysts had hailed the technical achievement of Ingres under ASK, many believed the product's visibility had languished under that owner.

Indeed, CA's optimistic six-month update on Ingres entitled President and Chief Operating Officer Sanjay Kumar to fire salutes at RDBMS industry leader Oracle Corp. "Our mission is not to focus on movies [referring to Oracle's Media Server initiative] but mission-critical database technology," he said.

Profitable position

CA executives said the Ingres unit was profitable in the first quarter. CA owned it. Ingres' total revenue should provide CA with another \$30 million in sales for the period ending Dec. 31, according to Charles E. Phillips,

vice president of financial analysis at Kidder, Peabody & Co. in New York.

As a result, customers now seem to be waiting to see what CA delivers.

Of course, one reason could be that migration from one RDBMS environment to another is an extremely expensive and painstaking process for users, Phillips said. Those issues have not been lost on longtime Ingres users.

For example, the Toronto Transit Commission was three years into a \$7 million project designed to provide a real-time scheduling and dispatch system, based on Ingres technology, for disabled commuters when the news of CA's plans to acquire ASK hit the streets.

"We're an Oracle customer, too, and the issue of switching to Oracle was quite real. But it

wasn't a preferable option," said George Froehner, a data administrator at the transit authority.

Praised the test

Because the project was so far along, the transit commission decided to give CA a chance to prove itself. CA helped wade off Oracle advances by informing the group that 80 CA-IDMS database developers were being retooled to work on Ingres products, Proctor added.

Joseph B. Greulich, director of MIS at Roberts Express, Inc., an emergency freight service in Akron, Ohio, was also "pretty worried" when CA took over Ingres. However, Greulich's peers at parent company Roadway Services later informed him that CA "had changed its stripes over the past three years" by becoming more responsive to its own needs.

Greulich said he was impressed by what he has seen from the Islandia, N.Y., vendor during its limited ownership of the Ingres technologies.

LightStream fills ATM gap for Cisco

By Stephen P. Klett

■ Cisco Systems, Inc.'s appetite for acquisitions continues unabated. The Internet-working giant plans to gobble up high-end switch vendor LightStream Corp. for \$120 million [CW, Dec. 31].

LightStream, a joint venture formed by Bolt Beranek and Newman, Inc. and UB Networks, Inc. in 1993, markets an enterprise-class switch called LightStream 2020. The switch provides transport services for voice, data and video-over Asynchronous Transfer Mode (ATM) networks.

The deal, which Cisco expects to consummate next month, will fill an enterprise hole in the company's switching strategy. It will also allow the San Jose, Calif.-based company to compete with the likes of General Datacom Corp. and Newbridge Networks, Inc. on the small

but rapidly growing high-end ATM playing field (see chart).

"This is a very good move," said Jennifer Pigg, an analyst at The Yankee Group, a market research firm in Boston. "Cisco gets very good ATM technology without alienating its hub [partners], and the LightStream product is aimed at the wide-area market Cisco typically targets."

Owning its own

"Before, Cisco didn't actually own its own ATM technology," said Mary Petrovsky, an analyst at The Burton Group in Salt Lake City. "To compete going forward, it's best to have control over your own technology."

The impending acquisition advances Cisco's efforts to round out its switching product family via partnerships and purchases. The current lineup consists of the following:

• HyperSwitch A100: Workgroup ATM switch built by NEC Corp. and sold by Cisco.

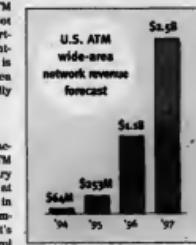
• Catalyst: Workgroup Fiber Distributed Data Interface and Ethernet switches derived from the acquisition of Crescendo Communications, Inc.

• Ethernet LAN switch: Derived from the acquisition of Kalpana, Inc.

LightStream 2020 would give Cisco a high-end ATM offering for campus and enterprise backbone applications.

Analysts said the deal is good for both companies. While Cisco gains cutting-edge ATM technology, LightStream — which has done less than \$10 million in sales so far — gains access to

Cisco's big-end distribution channels. LightStream will remain at its Billerica, Mass., headquarters, which will become "the center of gravity for ATM development for Cisco," a Cisco spokesperson said.



Source: Electronic Trend Publications, San Jose, Calif.

**THIS ONE SAYS
YOU'RE A VISIONARY.**

**THIS ONE SAYS
YOU'RE NEARSIGHTED.**



486 /



*If you encounter a compatibility problem within three years after the original purchase, we guarantee that Dell's engineers and technicians will work with you to identify the cause and recommend a solution. For a complete copy of our limited compatibility guarantee, inquire Dell at 800-933-6177 or run an compatible ISA or EISA system of the same vintage. If a copy of our Limited Warranty, please write to Dell Computer Corporation, 2214 W. Brooker Lane, Bldg. A, Austin, TX 78758. *Price valid in the U.S. only. Some products and promotions may not be available outside the U.S. Pentium Processor logo, and Pentium are trademarks of Intel Corporation. Dell declines proprietary interest in the marks and names of others. ©1994 Dell Computer Corporation. All rights reserved.



With so many changes on today's technology horizon, seeing the forest for the trees can be quite a challenge.

For example, many vendors are still heavily promoting 486 systems that were originally designed for the computing environment of the past.

At Dell, we're making it easy and safe to move to the future offered by Pentium® processor-based PCs.

Dell OptiPlex™ Pentium processor-based systems give your organization an upgrade path to the powerful new operating systems and applications that will change the marketplace in the months to come:

For less than the price of a 66MHz 486, the Dell OptiPlex delivers the platform and standards you'll need for 1995 and beyond. Specifically, Plug-n-Play, PCI, leading reliability and guaranteed compatibility.

So call us today. Instead of putting a piece of history on your desk, we can bring you the future.

A benefit that's easy to see.

OPTIPLEX™

DELL OPTIPLEX 560/L
60MHz PENTIUM® PROCESSOR

- 8MB RAM/270MB Hard Drive
- VS14 Monitor (14" CRT, .28mm)
- Guaranteed Compatibility¹
- 3-year Warranty¹

\$1799

Product Code #300247

DELL OPTIPLEX XL 575
75MHz PENTIUM PROCESSOR

- 8MB RAM/540MB Hard Drive
- VS14 Monitor (14" CRT, .28mm)
- Guaranteed Compatibility¹
- 3-year Warranty¹

\$2279

Product Code #300275

DELL OPTIPLEX XL 590
90MHz PENTIUM PROCESSOR

- 16MB RAM/540MB Hard Drive
- VS14 Monitor (14" CRT, .28mm)
- Guaranteed Compatibility¹
- 3-year Warranty¹

\$2845

Product Code #300293

DELL OPTIPLEX XMT 590
90MHz PENTIUM PROCESSOR

- 16MB RAM/1GB Hard Drive
- VS15 Monitor (15" CRT, .28mm)
- Mini Tower Chassis
- Guaranteed Compatibility¹
- 3-year Warranty¹

\$3235

Product Code #300295

DELL

(800) 627-9966

MONDAY-FRIDAY 7AM-9PM CT • SAT 10AM-6PM CT
SUNDAY 12PM-5PM CT • CANADA CALL 800-387-5735
KENSICO 1-800-7 • MEXICO CITY CALL 800-228-7811

Guarantees apply to PC hardware only and does not extend to software or devices not provided
the U.S. Price and specifications subject to change without notice. The local dealer and

Poetic lore of '94

As next year nears we take the time
To review the year just passed, in rhyme
And pay our tribute to a smattering
Of news that kept our keyboards clattering.

Highway metaphors abounded;
Software makers' stocks got pounded;
Laptop backlogs were persistent;
Wind still nonexistent.

Objects were the thing to do,
Just like CASE was in '92.
Laptops enabled solitaire
At seven miles in the air.

Intel suffered much derision
From spotty troubles with
division;
Since when does 2+2,
some whine,
Yield 3.14159?

The anti-Bill Gates coalition
Cried of unfair competition.
A consent decree drew much invective —
A spanking would be more effective.


Of infohighs we've had a plateful;
Users reading rec.baseball.
Will highways grow as ideas flower
Or turn into L.A. at rush hour?


Failure rates of three in four
Made re-engineering users sore
As most of benefits resultant
Accredited to BPR consultants.

Gersner brought his skills to bear
And got to 70 bucks a share.
At Digital the letters AXP
Don't yet spell profitability.

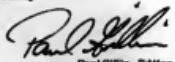
Novell's a year sure was eventful;
Frankenbergs was heaven-sent.
Now the big job seems to be
Users stuck on NetWare 3.


Market share was CA's task:
* All it had to do was ASK.
Its buyout met with mostly cheers,
Except from Ingres engineers.


Client/server costs, in fact,
inspired IS heart attack.
Who'd have thought those toy PCs
Could cost more than a Mercedes?

It could have been a bigger mess,
Like dBane, DOS or Notes Express.
Or early Warp, as some folks call it —
Worked great, but you could not install it.

Cobol folk are feeling goaded;
Their skills may soon become outmoded.
But maintenance people shout, "Hooyah!"
2000's just five years away.


Paul Gillin, Editor
Internet: pgillis@pac.com

BENIGN COOPERATION



3.1 hinders 486

I do not agree with Ted Vegvari's characterization of the Intel Corp. 486 as being "already too slow to reliably send or receive a fax in the background while running other large applications in the foreground" and "causing frequent application errors and requiring reboots" [Intel's 486 left in the dust by new chip contenders," CW, Nov. 14].

This is not the fault of the 486, but rather that of an inadequate operating system (Windows 3.1). With a pre-emptive multitasking operating system, such as OS/2, I encounter hardly any errors sending or receiving faxes on my 486DX/33 with a bunch of other applications running in the foreground. Update your operating system, not the 486.

Wayne Huang
*University of Michigan
Medical Center
Ann Arbor, Mich.*

Innovation thrives

Carole Dalton seems worried that Microsoft will destroy the Windows application market and damage the market for core business software by offering consumers a limited version of Microsoft Office in Windows 95 [Bundling is bad news," CW, Nov. 14]. Anyone want to bet on that?

I suggest there is a human tendency toward fashion and individualism. We want to be part of the group but do it our own way. Object Linking and Embedding and OpenDoc will foster market competition by enabling the human desire to have everything just right. Are we

all driving the same car? Wearing the same clothes?

If Microsoft offers the perfect word processor or spreadsheet, I suppose I could find something else to do. But what about that gem of a personal information manager or that new multimedia morphing module? And where is the business software for the middle tier of client/server? That should keep us busy for a while.

It is up to consumers to decide when we are perfectly satisfied with our software. I, for one, see a lot of room for improvement. Let's not encourage the Justice Department to speed more time smacking around in our backyard.

Steve Edens
*Senior business analyst
The Computer Group/USConnect
Columbia, S.C.*

Follow the Mac

Bravo to Computerworld for promoting the idea of real competition for Microsoft in PC operating systems ["IBM+Apple=Zazz," CW, Nov. 14]. It's clear that the PowerPC has greatly reduced Pentium prices, while one doubts Windows would be anywhere near where it is now without [borrowing from] the Macintosh operating system.

The IBM-compatible computers you need to be a mechanic to operate must give way to more modern machines. The industry can only benefit if the best operating system becomes available at a reasonable price on the majority platform.

It is likely that not even Apple could come up with the hardware jungle inside all those PC boxes to make them as seamless as Macintoshes. But even a small improvement in

operating system efficiency would be a boon to the nation's businesses in lower support and training costs and higher productivity.

Bryn Beorse
Aberdeen, Wash.

Flight plan

To clarify "Unis' maintenance alliance" [See client/server sidebar] (CW, Nov. 7): The number of clients and servers mentioned — 10,000 and 350 — is a projection for the total enterprise in the next decade. In 1995, the fully deployed Engineering and Maintenance System will run on approximately 8,000 clients and an undetermined number of Unix servers. Also, the warehouse of parts includes not only engines but all other aircraft parts as well.

Wayne L. Anderson
*Director of MIS
United Airlines
San Francisco*



Computerworld welcomes comments from its readers. Letters may be edited and should be addressed to Bill Labars, Editor in Chief, Computerworld, P.O. Box 9175, 375 Concourse Road, Framingham, Mass. 01702. Fax number: (508) 875-6932; Internet: letter@cw.com. Please include an address and phone number for verification.

Fill it out. Fax it in.

**51 issues for only \$48. Now
Only \$39.95**

FAX NO. 614-382-1058
 Yes, I want to receive my own copy of COMPUTERWORLD each week. I accept your offer of \$39.95 per year - a savings of \$8.00 off the basic subscription price. Plus, I'll also receive the new '94-'95 COMPUTERWORLD Salary Survey FREE just for trying COMPUTERWORLD.

PC951-E

First Name _____ MI _____ Last Name _____
 Title _____ Company _____
 Address _____ City _____ State _____ Zip _____

Address Shows: Home Business New Renew Basic Rate: \$48 per year

* U.S. Only. Canada \$95, Mexico, Central/South America \$110, Europe \$225, all other countries \$295. Foreign orders must be prepaid in U.S. dollars.

Please complete the questions below to qualify for this special rate.

1. BUSINESS/INDUSTRY (Circle one)
 10 Manufacturer (other than computer)
 20 Financial/Insurance/Banks
 30 Industrial/Engineering/Trade
 40 Wholesaler/Distributor
 50 Business Services (except IT)
 60 Manufacturing (except Computer/IT)
 70 Communications/Systems/Public Utilities
 80 Transportation
 90 Manufacturing/Petroleum/Refining/Agri.
 95 Manufacturer of Computers/Computer-Related Systems/Components
 85 Systems Integrators, VARs, Computer Service Businesses, Software Planning & Consulting Services
 96 Computer Peripheral Devices/Cat./Hardware
 85 Other _____

Please include

COMPUTERWORLD



Not off the
press!
1994-1995
edition

2. TITLE/POSITION (Circle one)
 10 Managerial/Supervisory
 19 Chief Information Officer/Executive Ass't. VP
 20 Financial/Marketing/Management
 21 Director/Manager, Sales Information Center
 22 Dir. Mktg./Prod. Svcs., Data/Tele. Comm.
 23 Dir. Sys. Dev./Development, Software Services
 24 Dir. Mfg. Sys. Development, Software Services
 25 Dir. Sys. Integration/Value-Added Computing Management
 26 Dir. Programming/Software Development
 27 Pres./Owner/Partner, General Manager
 28 Vice President, Marketing
 29 Vice President, Controller, Financial Officer
 30 Other _____

(Circle all that apply)

3. Do you use, evaluate, specify, recommend, purchase

(Circle all that apply)

31 Computer Hardware
 32 Software
 33 Office Equipment
 34 Sales
 35 Marketing
 36 R&D
 37 Windows NT
 38 OS/2
 39 Unix
 40 Macintosh
 41 Mac OS
 42 Windows 95
 43 Windows NT
 44 OS/2
 45 NetWare
 46 Application Products
 47 Yes No
 48 Documented Products
 49 Yes No
 50 Networking Products
 51 Yes No

E4461-E

Fill it out. Fax it in.

**51 issues for only \$48. Now
Only \$39.95**

FAX NO. 614-382-1058
 Yes, I want to receive my own copy of COMPUTERWORLD each week. I accept your offer of \$39.95 per year - a savings of \$8.00 off the basic subscription price. Plus, I'll also receive the new '94-'95 COMPUTERWORLD Salary Survey FREE just for trying COMPUTERWORLD.

PC951-E

First Name _____ MI _____ Last Name _____
 Title _____ Company _____
 Address _____ City _____ State _____ Zip _____

Address Shows: Home Business New Renew Basic Rate: \$48 per year

* U.S. Only. Canada \$95, Mexico, Central/South America \$110, Europe \$225, all other countries \$295. Foreign orders must be prepaid in U.S. dollars.

Please complete the questions below to qualify for this special rate.

1. BUSINESS/INDUSTRY (Circle one)
 10 Manufacturer (other than computer)
 20 Financial/Insurance/Banks
 30 Industrial/Engineering/Trade
 40 Wholesaler/Distributor
 50 Business Services (except IT)
 60 Manufacturing (except Computer/IT)
 70 Communications/Systems/Public Utilities
 80 Transportation
 90 Manufacturing/Petroleum/Refining/Agri.
 95 Manufacturer of Computers/Computer-Related Systems/Components
 85 Systems Integrators, VARs, Computer Service Businesses, Software Planning & Consulting Services
 96 Computer Peripheral Devices/Cat./Hardware
 85 Other _____

Please include

COMPUTERWORLD



Not off the
press!
1994-1995
edition

2. TITLE/POSITION (Circle one)
 10 Managerial/Supervisory
 19 Chief Information Officer/Executive Ass't. VP
 20 Financial/Marketing/Management
 21 Director/Manager, Sales Information Center
 22 Dir. Mktg./Prod. Svcs., Data/Tele. Comm.
 23 Dir. Sys. Dev./Development, Software Services
 24 Dir. Mfg. Sys. Development, Software Services
 25 Dir. Sys. Integration/Value-Added Computing Management
 26 Dir. Programming/Software Development
 27 Pres./Owner/Partner, General Manager
 28 Vice President, Marketing
 29 Vice President, Controller, Financial Officer
 30 Other _____

(Circle all that apply)

3. Do you use, evaluate, specify, recommend, purchase

(Circle all that apply)

31 Computer Hardware
 32 Software
 33 Office Equipment
 34 Sales
 35 Marketing
 36 R&D
 37 Windows NT
 38 OS/2
 39 Unix
 40 Macintosh
 41 Mac OS
 42 Windows 95
 43 Windows NT
 44 OS/2
 45 NetWare
 46 Application Products
 47 Yes No
 48 Documented Products
 49 Yes No
 50 Networking Products
 51 Yes No

E4461-E

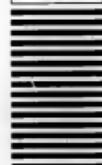


NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

BUSINESS REPLY MAIL

FIRST CLASS MAIL PERMIT NO. 55 MARION, OH 43306

POSTAGE WILL BE PAID BY ADDRESSEE



COMPUTERWORLD

P O BOX 2044
MARION OHIO 43306-2144



NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

BUSINESS REPLY MAIL

FIRST CLASS MAIL PERMIT NO. 55 MARION, OH 43306

POSTAGE WILL BE PAID BY ADDRESSEE



COMPUTERWORLD

P O BOX 2044
MARION OHIO 43306-2144



Dare to do nothing

Joseph Maglietta

Thank you. [Applause.] Thank you very much. It's a real honor and pleasure to speak to you here at "Status Quo '95," the conference for IS professionals against change.

In a couple of moments, we'll announce the winners of this year's journal paper competition. (Yes, they're the same entries that won last year.) But before we do, I'd like to share a couple of thoughts with you. It's a confession of sorts.

Now I know some of you are thinking, "What could he *possibly* mean?" I mean, you see the short-sleeved white shirt, the pocket protector, the NCC '95 button and wonder, "Have I ever seen a more trailing-edge guy?"

But until a couple of years ago, I was a very different character. I was COO of a good-size manufacturing company. I spent half my time running around to IS conferences — re-engineering, learning organizations, empowerment, customer service, partnering with the business — I heard it all.

I knew every League business school professor and size-figure consultant in the country. We hit Wiltshire Head, Sun Valley, Orlando, Tucson and San Diego. Sure, my golf game improved a heck of a lot, but then a funny thing happened.

I got fired. Not just once, but seven times in 10 years. I never held a job for more than 18 months. Well, it turns out that a lot of other people were having the same experience. That got me thinking: What's wrong with this picture?

Then it hit me: Why not skip the boring talks, the bad hotel food, the fights with management and all the headaches and heartache that goes with trying to push

new ideas? Why not enjoy some peace and quiet before the axis falls again — which it always does?

I know it seems obvious today, but back then it was new. Man, I got so fired up I started doing some research. I found a whole bunch of people who figured this out years ago. There was Ellen Glasgow, who wrote: "All change is not growth, all movement is not forward." The writer Elliza-

beth Clarke Dunne oozed: "Change is an easy panacea. It takes character to stay in one place and be happy there."

But my favorite is some cowboy wisdom that my grandfather told me as a boy. He'd say: "Never swap horses crossing a stream."

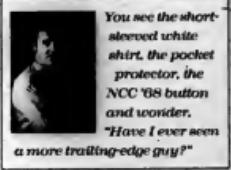
These words ring truer than ever today. That is why I launched this conference and why you continue this crucially important, inertial work today.

And the winners are ...

Now, let's take a look at our winning papers. In no special order, this year's winners are: "The Seven Habits of Highly Inflexible People"; "If It Ain't Broke Don't Fix It"; "Network Schmetz-work"; "Theory Z-e-p-z-e Management"; "Hollerith and Me"; "Getting to No You"; "Engineering the Corporation"; and my own personal favorite, "Glass-House Gods." Let's applaud our authors.

Because we never change our schedule from year to year, you know our end event is the punch-and-poker tournament. Let me just leave you with one final thought: Changing is for flat tires and poopy diapers, not perfectly good companies and IS managers. Dare to do nothing. Thank you very much.

Maglietta is *Computerworld's* senior editor, corporate strategies. You could E-mail him at jmaglietta@cw.com, but why bother?



You see the short-sleeved white shirt, the pocket protector, the NCC '95 button and wonder.
"Have I ever seen a more trailing-edge guy?"

The Internet as a beer party

Esther Dyson

away from it all?

Like the Internet, parties might start out as fairly exclusive affairs, but pretty soon they become the place to have fun, to do business, to hide from the rest of life. Parties can also give people the opportunity to be alone but not lonely — just as someone can go into a corner with their own beer and think his own thoughts or read a book.

All kinds of people would go to the parties — nice people and jerks, sexist pigs and starlets, academics and jocks, Brazilians and, eventually, Ukrainians. On the Internet, of course, it will be easier to get people together who have common interests but are geographically distant. And children will be allowed on the Internet — although perhaps not at some parties.

How can you control what goes on at your net party? If requires a subtle hand, not just rules and regulations. Each party has its leaders — people who steer the conversation and provide a model for appropriate behavior. In

the end, the host can decide to throw the rowies out. So if you're setting up your own "beer party" consider that the first few people you invite will influence the others who show up and how they all behave.

Overall, the Internet is like a beer party — just one more place where people carry on their daily lives. There will be different Internet beer parties for different crowds. And the people who gather at any particular beer party — or Internet community — play more of a part in defining it than does the beer itself.

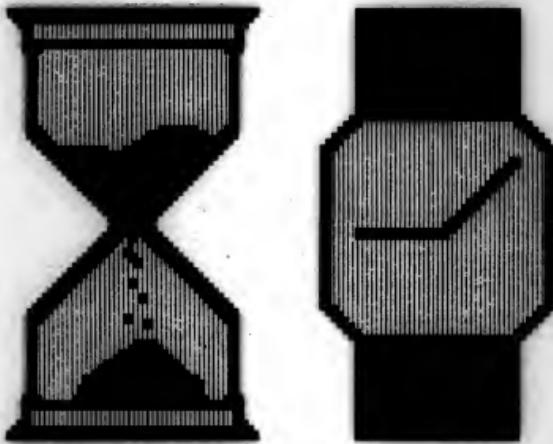
The only real question is how pervasive the Internet may become. For a long time, it will be just one more place for people to gather, but most will still live their daily lives in the real world. Only gradually will they notice that more and more of the real world is happening on the Internet.



Like the Internet, parties might start out as fairly exclusive affairs for a few friends, but pretty soon they become the place to be.

Dyson is president of EDventure Holdings, Inc. in New York. She welcomes readers' thoughts and can be reached on the Internet at eddyson@erols.com.

PHYSICISTS TELL US ELECTRICITY moves at nearly the speed of light. Apparently, they've never been on a congested network.



IF THE PEOPLE on your network are experiencing delays, they certainly don't waste any time letting you know about it. **NOW YOU HAVE AN ANSWER:** the *Galactica® Network Switch* from Chipcom. **A GALACTICA SWITCH** lets you add up to 32 new Ethernet segments for 320 Mbps of capacity—enough bandwidth to satisfy even your most voracious users. It's SIMPLE, TOO—just plug it in and it's ready. **YOU DON'T HAVE TO CHANGE ADAPTOR CARDS, CABLING OR WIRING.** PLUS, WITH OUR ONDEMAND™ Switch Central management application, managing your switch is as

easy as using it. AND UNLIKE YOUR USERS, it's completely undemanding.
IT WORKS WITH ANY mannfacturer's hubs and supports all Ethernet
media. IT EVEN provides FDDI switching and lets you migrate to
ATM in the future. SO AS YOUR network becomes more sophisticated,
your switches won't become obsolete. CALL 1-800-228-9930, ext. 320
to learn more about the Galaxy Network Switch and the rest of our
network system solutions. *Network Switching Systems by*
CHIPCOM

WHAT ARE YOU waiting for?



Desktop Computing

TEST-DRIVE: PC ANYWHERE, 40
APPLE'S POWER MAC ADD-IN CARD
REQUIRES EXTRA MEMORY, 40

Hertz steers customers in right direction

By Thomas Hoffmann

Remember in *National Lampoon's Radioactive* when Chevy Chase, a.k.a. Clark Griswold, inadvertently drives his family off a St. Louis highway and into a crime-ridden neighborhood? Fortunately, the hapless vacationers lose only their hats and luggage. An amusing bit of celluloid, perhaps, but an all-too-frightening prospect for travelers in real life.

To prevent such mishaps, the Hertz Corp. is introducing an onboard navigation system to car renters in cities such as Miami, Los Angeles and Detroit. The Hertz NeverLost system is based on Rockwell Automotive's Global Positioning Satellite (GPS) systems and gyroscopic dead-reckoning technologies designed to route travelers directly to their intended destination.

The Hertz NeverLost system includes electronic route guidance software from Zexel USA Corp. in Farmington Hills, Mich., that draws on electronic mapping software developed by Navigation Technologies in Sunnyvale, Calif. The system appears as a dashboard-mounted, 4-in.-LCD video screen and runs on a Motorola, Inc. 68000 chip. When a traveler picks up a Hertz NeverLost-equipped rental

car at an airport, he can punch in the address of his hotel and receive computer-generated voice instructions and an LCD readout of the directions.

In the event a NeverLost user misses a turn, the GPS system will recognize the error within 20 to 30 meters, recalculate the driver's position and get him back on course, according to Ray Mashia, director of navigation systems at the Troy, Mich., division of Rockwell International Corp.

Not of the same class
Hertz is not alone at the wheel. Rival rental car agency Avis, Inc., is installing the same technologies in its cars in New York, Chicago and Indianapolis. But the firms are charting different courses. Avis is installing navigation systems in its 1995 Oldsmobile 88 "premium" class cars as a \$5 option to interested drivers. Hertz, on the other hand, is rolling out navigation systems to drivers of its "luxury-class" Lincoln Town Cars, its full-size Ford Tauruses and Sable sedans and its popular minivans Ford Contour and Mystiques — at no extra cost for the first three months of the service.

Hertz has decided to let customers test-drive the technologies to determine

which automobile classes the Park Ridge, N.J., car rental giant should target.

"There's no reason — subject to customer demand — why we might not put these systems in other cars, like Ford Explorers and minivans," said Robert J. Bailey, senior vice president of quality assurance and administration at Hertz's worldwide reservations and data processing center in Oklahoma City. Hertz will likely adopt the same \$5 service fees as Avis to remain competitive, Bailey added.

Innovative uses of technology, such as the NeverLost system and computerized driving directions combined with savvy marketing and competitive pricing, have enabled Hertz to remain atop its perch in the top-heavy car rental industry despite the challenges of Avis and upstarts such as Enterprise Rent-A-Car.

Although Hertz and Enterprise do not compete directly in the same markets — Hertz controls the airport and near-airport market, while Enterprise dominates the local/replacement market — St. Louis-based Enterprise recently surpassed Hertz in fleet size for the first time ever

with 231,985 U.S. cars to Hertz's 215,000, according to *Auto Rental News*, a bimonthly industry magazine based in Redondo Beach, Calif.

Playing catch-up

But Hertz has been expanding its lead in the airport rental market against Avis and is expected to finish the year with \$2.1 billion in revenue, compared with Avis' \$1.7 billion, according to the magazine. "Avis has always been No. 2 and 'trying harder,' but they haven't been able to move ahead," noted Robert Langfield, president of Langfield & Associates Ltd., an Incline Village, Nev.-based consultancy specializing in travel management and automation. "It certainly doesn't take away from Avis, but strength does have its advantages."

Hertz's plans to offer the onboard navigation systems to a wider range of car customers than Avis could help the company push its lead further. In a recent American Express Co. survey of 1,784 U.S. corporations, 70% of respondents said their companies impose size restrictions on the cars their employees can

Hertz, page 40

User interface

Windows 95 earns high marks for ease of use, survey reveals

By Stuart J. Johnston

Microsoft Corp. is touting a study on Windows 95's ease of use that reveals that even experienced Windows 3.1 users have an easier time with the new interface. Some user advocates give the interface a qualified thumbs-up.

The survey, conducted by Usability Sciences Corp. in Dallas, showed that most Windows 95 users in beginner, intermediate and advanced groups finished basic tasks in nearly half the time as they did with Windows 3.1. The users made their evaluations after an hour and a half of use.

"I think it's the usability [of Windows 95 that will make us migrate], since like the long file name support and the cascading menus," said Brian Moura, assistant city manager for the city of San Carlos, Calif.

While the city will aggressively move to Windows 95 when it ships next year, usability is not the only issue driving the

change. Other aspects of the 32-bit system, such as its 32-bit multitasking environment and its scalability, are also contributing factors, he said.

In the survey, 75 Windows 3.1 users were given 20 minutes to familiarize themselves with Windows 95. Then they were asked to perform a series of tasks, and their performance on each was recorded for both Windows 95 and Windows 3.1, said Jeff Schueler, president of Usability Sciences.

The participants were recruited from Dallas/Fort Worth-area corporations that employ more than 50 people, with one-third coming from each category of user — beginner, intermediate and advanced. Microsoft did not designate test participants but required that they be corporate users, Schueler said.

Participants were asked to perform common file functions such as locating, copying and moving files as well as switching between active programs.

While two-thirds of the users found

Windows 95 easier to use than Windows 3.1, only one-third felt more comfortable with it than with Windows 3.1. However, 84% said Windows 95 enabled them to complete tasks "most effectively and quickly."

According to the report, "after using Windows 95 for 1½ hours... users finished the same tasks in Windows 95 in almost half the time it took... in terms of Windows 3.1." At the end of the test, 73 of the 75 participants said they will migrate to Windows 95.

"I think it's going to be a knockout [because] the design is right," said Rick Gifford, an IS consultant at Washington state's Department of Social and Health Services in Olympia. "In terms of 'Are they there yet?' I don't know because I haven't had enough time with it yet."

Moura noted that not all Windows 95 features are simple to use and that some experienced users of Windows 3.1 may have difficulty.

"I think the people who are going to have trouble with it are the ones who will miss the [Windows 3.1] file and program managers," Moura said.

Neither Moura nor Gifford were surveyed

participants.

Not all users agreed that Windows 95's new interface will yield the same productivity gains for everyone, however.

"I'm afraid it's aimed more at the [beginning or intermediate] user than at high-end users," said Brionce Stephens, coordinator for space sciences in the Advanced Scientific Information Systems group at NASA in Huntsville, Ala. "In their desire to make this simple enough for everybody, [Microsoft] has made [it] too simple for some."

Part of NASA's plans

Stephens plans to upgrade a large number of less technical users to Windows 95 soon after it ships. He also expressed a desire to have the same user interface on Windows NT, which NASA has made a large commitment to on workstations and servers. The next major update of NT, code-named Cain, will include a superset of the Windows 95 interface.

However, Microsoft disclosed last month that Cain has been delayed until 1996, and executives are now considering making the Windows 95 interface available on NT sooner. [CW, Nov. 21]

PCAnywhere 2.0 raises the bar

But setup snag may frustrate nontechnical users

By Howard Millman

Symantec Corp. has added a raft of useful features to PCAnywhere 2.0, its remote-access software. But configuring the software for your system may gray a few strands of your hair.

The improvements include a simpler installation that makes intelligent assumptions about your modem type and your machine's communication ports. Also, the upgraded installation routine, unlike its predecessor, no longer changes Windows system INI drivers or runs terminal-and-stay resident programs. If you cannot find your modem among the 230 listed, a custom modem setup lets you define the modem's characteristics.

Installation assistance is also available from two new Help features. Norton Assistant, a series of interactive, animated clips, leads users through a dozen of the most common tasks. Cue Cards, summoned by a click of the right mouse button, pop up compact explanations.

Despite these features and a compre-

hensive instruction manual, configuring the software can prove daunting because of the numerous variables in hardware, network, on-line and direct-connect configurations.

Our efforts to establish a direct connection first grayed some of our hair, then stood it on end. The snag resulted from a null-modem cable problem. (PCAnywhere uses all nine wires during a remote-control session). The other issue arose from the undocumented need to first disable Windows mouse drivers before using that port as a communication device.

This made it impossible to use a serial mouse (a modem occupied the other communication port). As is often the case, identifying the problem took hours; fixing it took only minutes. Symantec's technical support people proved helpful.

Once PCAnywhere was properly configured, however, using it was simplicity incarnate. Three oversized icons configure a machine for use as a standard communications program (to call an on-line service), a host or a remote machine.

After connecting to the host, the remote machine duplicates the host's screen. It then takes control of the host,

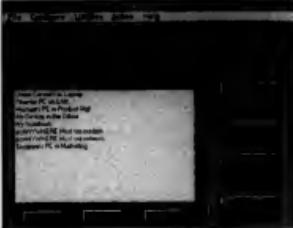
its predecessor. According to Symantec, it runs up to 25% faster from improved data compression and caching. Users can set the cache size from 64K to 896K bytes.

The highest data throughput we achieved in a direct connection was 38.4K bits/sec. Even at that speed, dealing with Windows' bloated files required considerable patience. As a practical matter, strive to transfer data over phone lines that can handle 5.6K bits/sec, or faster.

We particularly liked PCAnywhere's file transfer utility. Sporting a vertically split screen display similar to Windows' File Manager, this feature lets you drag and drop files between the host and the remote machine.

PCAnywhere's price for a five-node LAN pack is \$368. Upgrades from Version 1.0 are \$49.95, and cross-upgrades from DOS versions cost \$39.95.

MILTON is a principal of Data Systems Services in Croton, N.Y.



Symantec's PCAnywhere 2.0 can reinitialize a host's keyboard and mouse with the right password.

locking the keyboard and mouse. You can also reboot the host at session's end. To initiate a collaborative computing session, the host's keyboard and mouse can be reactivated locally or remotely with the right password.

Version 2.0 runs noticeably faster than

Card for Power Mac to make memory demands

By Mark Halper

Although Apple Computer, Inc.'s forthcoming 486 add-in card for the Power Macintosh angers faster Windows performance than what is now available for the system, users will have to purchase additional memory to optimize its speed.

That has some Apple users thinking twice about whether to purchase the 66-MHz 486DX2 card or use the less expensive but slower Windows emulation techniques of Insignia Solutions, Inc.'s SoftWindows.

Windows capability is important to many Macintosh users because some applications for x86-based machines do not exist for the Macintosh platform. Also, the majority of Apple systems in the corporate market are based on x86-based systems.

When Apple introduced its DOS Compatibility Card last month at Comdex/Fall '94, the company said it would price the product at about \$699 and offer a Power Macintosh system with the card for \$2,499 (CW, Nov. 14). The company plans to ship both the card and the system in the first quarter of 1995.

At \$699, the card would be more costly than Insignia's \$499 SoftWindows, which has a street price of roughly \$300. Some users said they are willing to spend the extra money to get the added kick of the 66-MHz card. Applications running on SoftWindows run at about the speed of a 486SX.

But Apple now concedes that users who want to get full speed from the hardware board will have to pay more than \$699. To maximize speed, users must install memory on the card rather than use memory res-

ident on the Macintosh system, an Apple spokesman said.

Apple's 486 card will house up to 32M bytes of memory, but the spokesman declined to say how much memory would be required to optimize speed.

John Chang, vice president of marketing and technical support at Mountain View, Calif.-based Insignia, said it takes 8M bytes

Windows on the Macintosh

Insignia Solutions' emulations

- Costs less than Apple solution
- Can run Windows inside Macintosh windows; Apple's card limited to toggling between the two
- Runs on any 486+ byte or PowerPC Macintosh; Apple's card good only on Power Macintosh. Insignia claims it will add a vital add-in slot. Power Corp. sells a 486-based PC/AT-like machines

Apple's 486 card

- Supports enhanced mode applications
- Faster, but requires memory to optimize
- Supports Creative Labs, Inc.'s Soundblaster chip set

to achieve 66-MHz-type performance from the board. Therefore, memory prices of about \$600 for 8M bytes mean that the actual cost of the board could be almost double Apple's \$699 price.

"I can't afford a whole computer for that, so why should I buy the board?" asked Susan Horwitz, business services coordinator at Lake Elsinore Unified School District in Lake Elsinore, Calif.

"My concern would be total package

pricing, especially if I have to pay even more for memory," said Todd Nugent, director of information services at Chapman and Cutler, a Chicago-based law firm.

Apple's board does have some advantages. Insignia's SoftWindows does not run applications written in "enhanced mode," meaning SoftWindows emulates software features written to the 386-based system's instruction set but not those written to the 386-based system and later Insignia plans to add enhanced mode support late in the first quarter of 1995. While that product will be richer than Insignia's present offering, it will not be faster.

But Insignia has sharpened its price edge even further by offering concurrent licensing. Chang said, "If 10 Macintosh users run Windows and only six need the operating system at one time, Insignia could sell the group a six-user license. By comparison, the group would have to purchase 10 boards if it took a hardware approach," Chang noted.

"That's a real good argument for emulation. I was not aware they had concurrent licensing," Nugent said.

The Apple spokesman said not all DOS compatibility cards users are looking for speed. Some want to install the card for flexibility in moving between Windows and Macintosh applications, he said.

Chang further noted that while SoftWindows has hefty memory requirements — Insignia recommends running it on Macintoshes with 16M bytes — it runs optimally off of system memory and does not require dedicated memory.

Hertz

CONTINUED FROM PAGE 39

rent. Furthermore, a full 58% of all rental cars used in the third quarter this year were midsize cars.

Mitsubishi Electronics America, Inc., instructs its employees to rent no higher than full-size cars from Hertz and Budget Rent-A-Car. Even though Mitsubishi just began using Hertz in October, "we would expect to see an increase in the number of employees using Hertz because of their [navigation] systems, since most of our travelers go to cities they've never been to before," said John Fazio, corporate travel manager at the Cypress, Calif., electronics maker.

Foreign safety

The Hertz and Avis navigation systems should also appeal to foreigners who travel frequently to the U.S. but would like to remain safe from carjacking and other crimes.

"I would certainly use the navigation system when I'm in the U.S. on business, but not when I'm traveling privately," said Carense Pashacka, a 25-year-old financial analyst at Hewlett-Packard Co. who lives in Aldinga, Germany. "Five dollars a day for three weeks would get too expensive. Besides, I've been to the U.S. a few times, and I don't get lost that easily," Pashacka added.

8.9 million hubs will be sold this year.



Don't let yours end up by
the side of the road.

IBM

Choose the hub that fits your network
from the complete selection at IBM



exactly,
Direct.

Now, save 25% on the latest models!

IBM has hubs. All kinds of hubs. Ethernet, Token-Ring and FDDI. Passive concentrators. Intelligent, manageable hubs. Plus multiprotocol, switched "super hubs."

It's a complete range of hubs to help LAN managers control their spreading, evolving networks.

In selecting a hub, it is critical to determine which one fits your current requirements, yet is flexible enough to grow with your changing needs. To make that decision, we suggest you consult with one of the networking experts at IBM Direct.

This brochure highlights a sampling of IBM's hub family, but virtually the entire product line is available through IBM Direct. Your IBM Direct specialist will quote you the latest, most competitive prices on IBM hubs. Be sure to ask about our special introductory offer of 25% off on selected new models!

At your convenience, you can get the information you need and place your order over the phone. IBM Direct lines are open 8 a.m.-8 p.m. (ET), Monday through Friday. Call today: 1 800 IBM-CALL (1 800 426-2255).



New from IBM: Intelligent Ethernet and Token-Ring hubs.

Given the explosive growth in networking, it's no surprise that LAN administrators need help managing their environments.

IBM introduces three outstanding new helpers: the IBM 8224 Ethernet Stackable Hub and the IBM 8230 Token-Ring Controlled Access Unit (Models 3 and 13).

These intelligent hubs bring cost-effective, centralized management to the smallest workgroups. And their modular design allows them to grow as you grow. All models support SNMP network devices, so you can monitor and control remote workgroups from a single workstation with programs such as NetView®/6000.

1800 IBM-CALL

Affordable hubs for workgroups

8224 Ethernet Stackable Hub

The new IBM 8224 is a premier remote site and workgroup Ethernet hub with stackable units of 16 10BaseT ports each, plus an optional media expansion port that can connect to an existing 10Base2, 10Base5, or fiber Ethernet network.

An 8224 Model 1 is an unmanaged (yet manageable) unit that can be stacked up to ten together in a standard rack or on a desktop. Model 2, with an SNMP agent, can manage a stack of nine Model 1s, to provide a total of 170 ports. And, unlike most competitive hubs, stacked units can be separated by as much as 250 feet. The 8224 also accommodates LAN growth with cascading through the media expansion port. To alleviate congestion, you can also segment an 8224 stack to isolate bandwidth-hungry servers and workstations.

The 8224 supports out-of-band management of a remote site via SLIP protocols. It supports SNMP MIB II, the hub repeater MIB, and the Novell® Repeater MIB, with management by DOS or AIX® applications, and SNMP over IP and IPX for management in a TCP/IP network and Novell NetWare® Management Station. For mission-critical applications, a second Model 2 can provide management redundancy.



8222 6-Port 10BaseT Workgroup Hub

Now you can add an entire workgroup to your LAN without rewiring. Ready to concentrate inexpensive, twisted-pair wiring, the IBM 8222 allows you to link as many as seven PS/2® or PS/ValuePoint™ computers or compatibles to a new Ethernet 10BaseT LAN. Six additional computers can be linked with each 8222 cascaded through either AUI or 10BaseT ports.

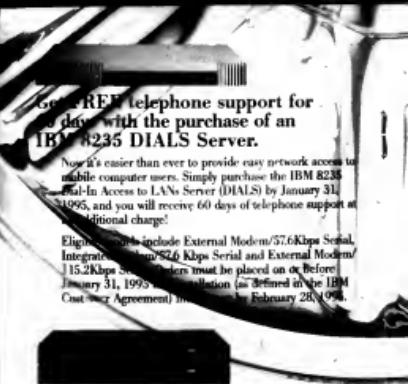
In addition, the 8222 hub automatically disables (partitions) any port connected to a station causing repeated collisions, then re-enables the port when the condition clears.

orkgroups of all sizes.



Inside:
Special offers
worth over
\$2,500!

Affordable hubs for workgroups



Get IBM telephone support for 60 days with the purchase of an IBM 8235 DIALS Server.

Now it's easier than ever to provide easy network access to mobile computer users. Simply purchase the IBM 8235 Dial-In Access to LANs Server (DIALS) by January 31, 1995, and you will receive 60 days of telephone support at no additional charge.¹

Eligible products include External Modem/57.6 Kbps Serial, Integrated Modem/57.6 Kbps Serial and External Modem/15.2 Kbps Serial. Orders must be placed on or before January 31, 1995 and must be shipped (as defined in the IBM Customer Agreement) and received by February 28, 1995.

IBM 8224 Ethernet Stackable Hub Coupon Special.

Purchase any IBM 8224 Stackable Hub before December 30, 1994 and you will also receive a coupon redeemable for additional IBM products at no additional charge.

Buy the IBM 8224 Model 001 and your hub will be shipped with a coupon good for two IBM LAN Adapters for Ethernet TP (ISA). At a list price of \$89 each, that's a value of \$178.

Buy the IBM 8224 Model 002 and your hub will be shipped with a coupon good for IBM StackwatchTM for WindowsTM (software that allows you to manage your 8224 using the Simple Network Management Protocol (SNMP)). Value: \$460.

Coupons included with products shipped through December 30, 1994. Coupon redemption must occur by February 28, 1995. No photocopies or facsimiles of coupons.

Workgroups of all sizes.



Purchase an IBM 8229 LAN Bridge and get a Single-Port Attachment Module at no additional charge!

For a limited time, your purchase of the IBM 8229 LAN Bridge includes your choice of one Single-Port Attachment Module at no extra charge. You can select \$874 on a Token-Ring Attachment Module, \$564 on an Ethernet Attachment Module, or \$395 on the WAN Annex Module.

Orders must be placed on or before January 31, 1995, and installation (as defined in the IBM Customer Agreement) must occur by February 28, 1995. This IBM Offer is exclusive to the 8229 LAN Bridge and is not combinable with any other applicable discounts or allowances.

Save \$1,250 on the IBM 8250 Multiprotocol Intelligent Hub.

Purchase an IBM 8250 (Models 065, 07C, or 017) with either an Ethernet or Token-Ring Management Module (limited to one per 8250), and you will be entitled to a discount of \$1,250 off list price on the 8250/Management Module combination.

Orders must be placed on or before January 31, 1995, and installation (as defined in the IBM Customer Agreement) must occur by February 28, 1995. This promotion may be combined with any other applicable discounts or allowances.

1800IBM-CALL

* Stackwatch is a trademark of International Business Machines Corporation.

Windows is a trademark of Microsoft Corporation.

Affordable hubs for work



Turn back!
You just
passed over
\$2,500
in savings on
IBM hubs!

workgroups of all sizes.



8228 Multistation Access Unit

The IBM 8228 is a reliable, cost-effective hub for quickly and easily connecting up to eight devices to a 16 or 4Mbps Token-Ring network. This passive unit is ideal for interconnecting with other hubs to create larger networks using IBM Cabling System (ICS) connectors.

It takes up very little real estate and can be located in a wiring closet, on a desktop, on a wall, or in a standard 19-inch rack. The 8228 offers Ring-In/Ring-Out (RI/RO) ports for added flexibility. It also supports STP and UTP cabling.

8230 Token-Ring Controlled Access Unit (Models 3 & 13)

The new IBM 8230 Token-Ring Controlled Access Unit (Models 3 and 13) brings intelligent manageability to small workgroups at a very competitive price per port. These newest members of the IBM 8230 family of intelligent concentrators also offer granularity and modularity that make them remarkably versatile and expandable units.

A new 8230 can perform as an affordable, entry-level workgroup concentrator for just a handful of devices or as a completely managed, full-function, 80-node hub with dual ring redundancy. You can configure it with 2-, 3-, or 4-port Loop Insertion Units (LIUs) that plug easily into the base unit for more port capacity as needed. Also available are 20-port Loop Attachment Modules (LAMs) and remote 16-port LAMs for linking network devices up to 200 meters from the base unit.

With a new 8230, you can manage your Token-Ring LAN via LAN Network Manager, or an SNMP manager such as NetView/6000. Enhanced error and status displays help you identify problems fast. And for LANs requiring extra reliability, an optional dual ring redundancy feature is available for use with Ring-In/Ring-Out modules.



High-



**8260
Multiprotocol
Intelligent Switching Hub**

The new IBM 8260 "super hub" is the platform for the next generation of high-speed networks. It provides for easy migration to asynchronous transfer mode (ATM), multimedia LANs and other technologies that require very high bandwidth.

The 8260 chassis accepts all media and interconnect modules from an IBM 8250, so it will protect your existing network assets.

With an advanced passive backplane architecture extending that of the 8250, the 8260 manages multiple segments concurrently. This very high density system can handle up to eight Ethernet, 17 Token-Ring or eight FDDI networks in a single 17-slot, fully managed hub.

Beyond its leading edge, ATM-ready design, the 8260 introduces the Intelligent Power System, with as many as four power supplies, that dynamically distributes the load evenly among all sources. The 8260 also introduces a new Distributed Management Architecture, enabling concurrent management of multiple LAN segments.

8235 Dial-In Access to LANs Server

Extending enterprise network resources to mobile computer users is now easier than ever. With the IBM 8235 Dial-In Access to LANs Server (DIALS), remote users can have full, transparent access to all your network services from any location that has dial-up phone service.

The 8235 DIALS is a high-performance, multiprotocol, multiport remote networking server that provides full-function Token-Ring or Ethernet connections. It supports protocols widely used in NetBIOS, NetWare, 3270 SNA, and TCP/IP.



Performance choices that fit expanding networks.



8250 Multiprotocol Intelligent Hub

The advanced IBM 8250 is versatile enough to protect your current LAN investment and serve as the cornerstone of your network for the future. An 8250 lets you create and connect LANs, change configurations, switch users and perform other tasks without major rewiring.

Build the 8250 system that fits your environment with your choice of more than 50 modules (concentration, interconnection and management), plus powerful management via NetView/0000.

The 8250 simultaneously supports Token-Ring, Ethernet and FDDI topologies over a wide variety of media. For future upgrades or changes, just add new "hot-pluggable" modules to your existing hub.

Management options include centralized or distributed, out-of-band locally or remote, in-band through SNMP, and remote log-on via TELNET from a TCP/IP station.

8250s also include fault-tolerant features and redundancy to keep client/server LANs' mission-critical applications up and running in the event of problems or hardware failure.



8271 EtherStreamer Switch

Is your Ethernet LAN getting clogged? The IBM 8271 EtherStreamer™ Switch can boost network performance at a very low cost per port. This high-performance, standalone device interconnects as many as eight 10BaseT Ethernet LAN segments or a single node, transports traffic at full media speed, and extends network bandwidth from 4 to 8 times that of a single Ethernet segment. When coupled with our full-duplex EtherStreamer adapters, you can now offer 20Mbps Ethernet performance for an individual workstation or a server.

IBM.

© International Business Machines
Corporation 1984

IBM United States
Department QUA
1133 Westchester Avenue
White Plains, NY 10604

Printed in the United States of America
10-541

All Rights Reserved

IBM reserves the right to modify or
withdraw this offer at any time.

References in this publication to IBM
products do not imply that they are the
only products available or that they
are intended to make them exclusive
outside of the United States.

IBM, ADX, NetView, and PS2 are
registered trademarks of International
Business Machines Corporation.

IBM Systems/32 and
PS/2 ValuePak are trademarks of
International Business Machines
Corporation

Novell and NetWare are registered
trademarks of Novell, Inc.

Jeffrey Henning

I-way needs service



I hate the information highway. I've had my fill of all its associated metaphors: "the slow lane of the information highway"; "finding on-ramps to the information highway"; or even (my favorite) "don't become roadkill on the i-way."

Almost everything about the metaphor is limiting — from Al Gore's vision that the government must build it (it's there now, being expanded all the time by private companies) to the vision of network users as motorists driving from place to place to pick up what they need.

Wild goose chase

Unfortunately, that last aspect of the metaphor is accurate, but it will change. Here's an example. In a typical comment, I drive to the Microsoft Basic forum on CompuServe to pick up some tidbits or

programming examples I can use in my work. I move on to the Executive News Forum to catch up on important news and then log on to CompuServe and on to the Internet to browse the PKD (Philip K. Dick, author of the stories that inspired *Mandrake and Total Recall*) newsgroup. When I finally park my modem, I've collected a lot of useful information — and some just plain fun stuff.

It's a fine way of working — if you don't have any better way to go about things — but it's time-consuming. You travel from forum to forum, newsgroup to newsgroup, and you never see dozens of stops that have the information you want. I don't want to drive around the i-way; I want the i-way to come to me.

For instance, I recently did a search on three Visual Basic-oriented forums on CompuServe to see if anyone had a word processing outline VBEX (so I wouldn't have to write my own). My search was the equivalent of driving to three stores, browsing the shelves and coming back empty-handed. Just like the real world, I will now have to go back and conduct my search all over again to see if what I want has become available. An interface designed like a highway (CompuServe even uses the traffic light for Go) will let me skip all that.

Of course, what should happen is this: CompuServe should have my search information and periodically rerun the search against newly posted informa-

tion. Then it should let me know when a file or message meets my criteria. It would be as if my local librarian (about the only place left with personal service) called me to let me know some release of a PKD novel had come in.

While some might dignify this persistent search function by calling it an agent, it is dead simple to implement and would take up little memory on the host system. It would also make the i-way, or whatever we should call it, that much more useful.

Unclear labels

Another limitation of on-line services is that too often information is given in a short label similar to what you might find on a road sign: "Gas station 10 miles ahead" or "Fragmented stories" (a PKD thread I posted).

For instance, I can search only the subject line of a message, which is limited to a few dozen characters, or the "to" and "from" fields — I can't search the actual text of the message. This means that buckets of information directly relevant to me are out there languishing because the billboard announcing them didn't attract my attention. Searches should cover the entire text of a message or file. This, of course, takes longer and requires detailed indexes to be built for each file, but it encourages traffic and is worth being developed by the on-line providers.

A few newsgroups and forums do let me search the text of articles but offer no intelligent searching. For instance, I recently did a search for "focus groups" because I wanted articles about focus groups. However, I mostly got articles that mentioned focus groups once. Articles either matched my request or didn't, in the classic binary fashion, when what I wanted was fuzzy matching — e.g., this article mentions focus groups 10 times and is probably most appropriate.

While today's on-line services may satisfy some friendly banter-gatherer urge of ours to go out and seek what we need, what I want is personal service — someone who figures out the type of information I'm interested in and provides it to me: a librarian. Your local librarian is probably one of the best assistants you can ever find, and nowadays can help you find information ranging from books on esoteric subjects to the latest video and software.

If you visit the library often enough, they'll even learn your interests and let you know what's come in lately. So instead of calling the internetwork the i-way, the labobahn, the date-dial carriageway or anything else, let's call it the personal librarian. At least we'll get a whole new collection of metaphors.

Henning is an analyst at consulting group Comstar International in Norwell, Mass. He can be reached on CompuServe at 74774.157.

Hewlett-Packard Co. has announced the HP ScanJet 3P gray-scale scanner.

According to the Palo Alto, Calif., company, the HP ScanJet 3P comes bundled with both text-recognition software and automatic scanning image software.

The product includes a copy utility that, when used with a printer, provides users with a copier at their desks.

The HP ScanJet 3P costs \$599.

► **Hewlett-Packard**
(415) 857-1501

Viking Components has unveiled memory upgrades for Compaq Computer Corp.'s LT1 Elite notebook computers.

According to the Laguna Hills, Calif., company, the 3.5" modules let Elite users expand the notebook to the maximum RAM. Modules come in 4M, 8M and 16M bytes.

Prices range from \$31.00 to \$4,325.

► **Viking Components**
(714) 645-7255

Microtech International, Inc. has announced PocketPak 320 and 500, 323M- and 500M-byte drives for the Macintosh.

According to the East Haven, Conn., company, PocketPak provides plug-and-play storage and was designed for Apple Computer, Inc. Powerbook and Macintosh applications.

The products include formatting and partitioning software, a SCSI cable and active SCSI termination.

PocketPak 320 costs \$595, and Pocket-

Pak 500 costs \$1,094.

► **Microtech International**
(203) 465-6222

MapInfo Corp. has announced MapInfo 3.0, MapBasic 3.0 and SQL Data Link for Macintosh and Unix.

According to the Troy, N.Y., firm, MapInfo 3.0 for Macintosh and Unix provides new visualization features, enhanced geographic analysis functionality and ease-of-use improvements.

MapBasic 3.0 for Macintosh and Unix provides developers with access to remote database query and update capabilities. The SQL Data Link for Macintosh and Unix module lets users connect to Oracle Corp. and Sybase, Inc. databases. Prices range from \$595 to \$2,495.

► **MapInfo**
(516) 263-6000

FireCoiler has announced the FireCoiler Desktop Media Protector, a portable one-hour rated fire safe.

According to the Rochester, N.Y., firm, the FireCoiler Desktop Media Protector protects computer media and backups and fits in a desk.

The product offers protection in fires up to 1,705 degrees Fahrenheit.

The FireCoiler Desktop Media Protector costs \$395.

► **FireCoiler Supplies**
(716) 355-9007

STB Systems, Inc. has unveiled Velocity 64V, a graphics accelerator card built around a 64-bit video controller chip.

According to the Richardson, Texas, company, Velocity 64V provides 4M bytes

of Extended Data Output VRAM and provides color at resolutions up to 1,280 by 1,024 pixels.

The product is available for Peripheral Component Interconnect and Video Electronics Standards Association local bus types and comes with STB's Vision software, an installation and configuration utility. Support is provided for a video window generator, scaler and color space conversion.

Velocity, 64V costs \$579. A 2M-byte configuration costs \$637.

► **STB Systems**
(214) 524-5750

Philips Laser Magnetic Storage has announced the CDD622, a CD recorder.

According to the Colorado Springs company, the CDD622 includes an upgradable cache buffer that eliminates the need for hard disk caching on every PC platform.

The product records and plays back at double or single speeds for all CD formats.

The CDD622 costs \$3,895.

► **Philips Laser Magnetic Storage**
(718) 522-7900

Pacific CommWare has announced TurboCommander, a Windows communications manager.

According to the Ashland, Ore., company, TurboCommander lets users move among Windows applications that use a single modem and monitor their communications activity.

A fax application may have primary ownership of the modem, but if the user needs the modem for another applica-

tion, TurboCommander transfers modems access and automatically returns control of the modem to the owner application upon completion.

► **Pacific Comm Ware**
(503) 625-2766

Computer Peripherals, Inc. has announced the VIVA 28.8 V.34 data/fax modem.

According to the Irvine, Calif., company, the VIVA 28.8 V.34 transfers data at a rate of 28.8K bits/sec. and sends and receives faxes at 1.44K bits/sec.

The modem includes V.42 Microcom Network Protocol, which provides V.42 error correction and data compression.

The VIVA 28.8 V.34 costs \$335 for the external model, \$1,995 for the internal model and \$299 for the PCMCIA version.

► **Computer Peripherals**
(714) 654-5447

Tekram Technology has announced the DC-300B, a SCSI host adapter for the XT/AT bus.

According to the Austin, Texas, firm, the DC-300B supports up to six adapters, and each adapter supports up to seven SCSI devices.

The product features hardware disk mirroring so users can write the same data to two drives simultaneously. It also includes a utility program that supports low-level formating, mirroring initialization and disk image copy and compare.

The DC-300B costs \$299.
► **Tekram**
(512) 415-1221

When We Say Server



s, We Mean Business.

Taking care of business. It's what you need in a server. And it's why your business should call ours.

For 10 years we've been packing power into some of the world's best portable PCs. Now we're doing the same for larger computers. Like the ones that run your workgroup, or even your whole company.

Fact is, we've made it our business to be one of the most connected computer companies in the world, and that's why we can offer a full range of reliable, fault-resistant servers.

 Z-SERVERS are easy to install, maintain and upgrade.
 Plus, they're designed to work with everything in your environment, from computers to operating systems to applications.



INTRODUCING THE HIGH-PERFORMANCE Z-SERVER G7

Up to four Pentium 90MHz CPUs

Upgradable to P6

Intel Multi Processor
Specification I.I-compliant

BALANCED I/O DESIGN

PCI and EISA bus slots

Dual Wide & Fast SCSI-2 disk

controllers standard

Up to 1 GB ECC memory

RELIABLE

Hot removable hard-disk drives

PCI RAID controller

Server management features

3-Yr limited warranty

3-Yr on-site service

But we don't stop there. We also

deliver the dependable service and sup-

port you need. What's more,

our remote management tools

give you the power to mon-

itor hardware, diagnose prob-

lems, set alarms and perform

preventative maintenance

from any PC on the network.

You'll find we work well with

budgets, too, which means you

get all the performance users

are asking for,

at the price

your account-

ing department

demands:



pentium
PROCESSOR

For more information and all the specs, give us a call today. Because once you put the power of Z-SERVERS at your side, hey, you're in business.

1-800-289-1320, Ext. 5145



Copyright © 1994, Zenith Data Systems Corporation. "Make The Connection" is a trademark of Zenith Data Systems Corporation. Contact Zenith Data Systems for status on certification and copies of certification reports. Intel Inside is a registered trademark and Pentium Processor is a trademark of Intel Corporation. All other trademarks are property of their respective holders.

Our smallest portable just won big.



PORTÉGÉ The Grand Slam. The Triple Crown. The Oscars of high technology. Toshiba's ultraportable 4.4 pound Portégé™ notebook has swept three of the computer industry's most coveted awards: Product of the Year, Portable MVP and the award for Technical Excellence.

The Portégé's remarkable balance of power, size and usability, coupled with 12 major awards, makes it easy to understand why it's

the best in its class. There's a powerful i486® processor, our acclaimed AccuPoint™ pointing device, an ultra-lightweight Lithium Ion battery that runs up to six hours, a stunning SVGA color active matrix display and built-in PCMCIA expandability.

See how far Toshiba has taken every aspect of portable computing. And think where it can take you. Portégé. It's the shape of things to go. Call 1-800-457-7777 for the dealer nearest you.

TENMCT

- 586/486 MHz™DX2
- 1.4" dia. color TFT LCD active matrix display—256 color SVGA
- 1MB RAM (expandable to 24MB)

TENMCT

- 33MHz SL Enhanced 486™SX
- 7.8" dia. color TFT LCD active matrix display—256 color SVGA
- 4MB RAM (expandable to 20MB)

Base Models

- 25MHz HDD
- Lithium ion battery
- Type II (3mm) PCMCIA slot
- 4.4 lbs.—15" x 9.5" x 1.5"

- AccuPoint™ integrated pointing device
- Integrated EISA graphics accelerator
- VL local bus video
- Port: serial, parallel, FDD and VGA adapter

- Optional Port Replicator
- MS-DOS®, Microsoft Windows™, and CorelWorks™ for Windows



In Touch with Tomorrow
TOSHIBA

Workgroup Computing

UNIX CONFLICT SMOOTHES
PATH TO WINDOWS NT 3.5, 4.0

Firefox ships LAN link to the Internet

By Surendra Mohan

The popularity of the Internet means network administrators have to deal with an increasingly large number of users who want access to it.

Printronix, Inc., in San Jose, Calif., said it is addressing that need by shipping Novix for the Internet. The company claims the server-based connectivity system for Novell, Inc.'s NetWare environment will give users access to the worldwide network.

IP address consolidation

Because the Internet uses TCP/IP as its network protocol, users must have an IP stack on their workstations to connect to it. For administrators, this means putting an IP stack on each machine — a time-consuming and tedious task. A Novell environment complicates this further by also requiring an IPX stack, which is needed to transport packets within in NetWare.

Novell is working on making TCP/IP run natively in NetWare 4.0. However, until that functionality is added, the problem of loading dual stacks remains.

By offering a server-based product, Firefox is trying to eliminate this problem. Novix for Internet, which runs on top of the NetWare Loadable Module Novix for NetWare, lets users access the Internet through the server. Administrators, therefore, have to manage only one IP address for all the users.

The real advantage to Novix for Internet is the addition of a package that extends capabilities from NetWare and connects to the Internet. "It's Jack Gold, senior research analyst at Meta Group, Inc., in Stamford, Conn. "Earlier [users] had to move to IP from IPX."

Novix for Internet also offers and supports popular Internet applications such as Mosaic and gopher, and News Reader, Telnet and file transfer protocol software.

"They [now] argue that Mosaic is free, which is true," Gold said. "But setting it up is an excruciatingly painful process. [People] are better off buying a commercial product."

Is it worth it?

Despite these attributes, not everyone is convinced that Novix for Internet adds value to Novix for NetWare. Clark Greenshields, a senior network analyst at Hoechst Celanese in Charlotte, N.C., has been using Version 2.1.1 of Novix for NetWare for about three years. Greenshields said it lets him do everything the Internet product would do but satisfies his users' needs.

Although Firefox has announced Version 2.2 of Novix for NetWare with some new features — hot standby operation, which enables a secondary server to take over the communications services of the primary server; Fiber Distributed Data Interface support; and IP address pooling — Greenshields said he is unlikely to use it. For one reason, it is expensive. For another, he said his version of the product satisfies his users' needs.

Hoechst Celanese is moving to IP as a standard backbone. It has a number of Digital Equipment Corp. VAXs and Unix machines that need internet access. Users need IP and an IP stack at the workstation to access, say, a VAX on the network. Putting the stack on the server eliminates the need to put an IP stack on the workstation, Greenshields said.

Novix for the Internet is available in two configurations: Novix Elite for the internet, which starts at \$1,425 for five users, and an add-on module for five users that starts at \$750. Novix for NetWare 2.2 is available in three configurations starting at \$750.

Stand-alone point-of-sale systems suit men's retailer

By Jean S. Bowman

Occasionally network outages were making information systems managers, store managers and executives at The Men's Warehouse, Inc., chain of men's clothing stores hot under the collar. Occasional leased-line outages were causing aging store terminals to disconnect from a Novell Unix computer at corporate headquarters in Houston.

So seven years after the 3240 million retail chain installed its remote store systems, the dumb terminals are headed out the door. Starting in February, Intel Corp.-based PCs running Novell, Inc.'s UnixWare 1.1 will be installed at all 224 stores — along with applications for everything from cash register functions, inventory, store management and personnel. Few teams of two technicians will travel the country for several months installing the systems, the company said.

"The main justification for doing this rollout is to create stand-alone point-of-sale operations," said Chief Information Officer Harry Levy, who is also senior vice president of planning. While customers have been able to buy suits during network outages, sales



Men's Warehouse CO Harry Levy: Networked PCs will replace remote store systems that are 'inoperable during network outages'

personnel have had to handwrite orders and receipts and later enter sales data once the network link comes on-line again, he said.

Stand-alone point-of-sale (POS) systems will allow local operations to continue uninterrupted. Once in place, the PCs will open the doors to client/server applications that can query the central database built with UniVerse from VMtek Software, Inc. in Framingham, Mass. Among these capabilities will be access

Stand-alone systems, page 46

Groupware could win big in Japanese corporate culture

By Elisabeth Hechtler
LONDON

Japanese corporate culture is in sync with the dynamics needed to make groupware applications worldwide, and the technology could succeed in Japan even as it risks being a fledgling failure in North America and Europe, according to research firm SRI International.

Groupware could also give Japan the means to become more competitive in the world software market. Japanese companies — including NTT Corp., Matsushita Electric Industrial Co., Fujitsu Ltd. and NEC Corp. — are working on groupware systems and applications, said Ashish Patel, senior industry analyst at SRI's London office. Patel spoke at a conference on groupware this month at the UK Department of Trade and Industry.

Japan has not yet taken to

groupware on the scale that North America or Europe has, and it lacks the technical infrastructure that groupware requires. But the collaboration needed to make groupware successful is already part of its corporate systems and processes, Patel argued.

Japanese organizations are inherently more team-oriented than U.S. companies, which often expect groupware-enforced teamwork to work even as

they reward individual performance. Japanese organizations also place great emphasis on consensus and are very analysis-driven, so they could use more tools that provide data for decision-making.

"European and North American organizations are implementing groupware in a brain-damaged or rushed way and generally fail to

realize the full benefits of groupware," Patel said.

Groupware in those locations is viewed as a "magic bullet," and companies are hurrying adoption and taking insufficient account of how corporate culture must change for it to work.

In addition, as software vendors begin to challenge market-maker Lotus Development Corp. Notes, people may be using immature or inappropriate products. Japan, on the other hand, may implement groupware more cautiously and deliberately and succeed, Patel said.

Patel acknowledged that an important prerequisite for Japanese groupware is a vastly increased technical infrastructure — particularly widespread PC LANs. He estimated that Japan is about five Groupware, page 46

Unix conflict smooths path to Windows NT 3.5

But some won't trust it for mission-critical data

By Ed Scannell

Shipping in less than 90 days, Microsoft Corp.'s Windows NT 3.5 already appears to be making some inroads among corporate users who were skeptical about deploying Version 3.1 as a departmental server to house data and applications.

The new version appears to be benefiting from the continued confusion and conflict that some users say they see among competing vendors promoting Unix.

"If some of these [Unix suppliers] don't start presenting a more coherent strategy for melding together multiple environments, they will just continue

opening the door wider for Microsoft," said David Devereaux, chief technology consultant at Boston Edison Co.

A recent study of Fortune 1,000 accounts by Forrester Research, Inc. revealed that 10% already consider Windows NT 3.1 a standard and, based on the strength of the latest version, 34% said they expect it to be a standard by 1996.

"Companies are still struggling to make sense of Unix, so they are beginning to see two advantages in Windows NT," said Richard

Buchanan, an analyst at Forrester in Cambridge, Mass. "One, it is one piece of code that runs across many platforms. The other is Microsoft's proven ability to generate enthusiasm among independent software vendors to write some interesting applications."

Flexibility issues

While the study shows that NT should continue enjoying reasonable success at the departmental level, Buchanan and some users interviewed said corporate accounts are still not ready to trust mission-critical data currently residing on

high-end Unix systems to Windows NT. They said NT still is not flexible enough in its ability to scale upward, and they are still reevaluating it to a variety of lower-end functions.

"We are using NT strictly as a file server and for electronic mail," said Martin Lindel, vice president of MIS and communications at Lindel Cedar Homes, Inc. in Seattle.

The other major force in the corporate server market, Novell, Inc., has managed to sidestep a head-to-head confrontation with Microsoft on the application server level, according to the survey.

"Novell will be better off if they continue to accentuate its strength as a network operating system provider," Buchanan said.

Stand-alone system

CONTINUED FROM PAGE 45

to customer profiles, inventory and sales information stored on the central Data General Corp. Avion 9500 Unix server, Levy said.

The revamp also aims to reduce the work load on the central server. The production server has four Motorola, Inc. 85000 CPUs, as does a second Avion server used for testing and development of software. Levy said he plans to buy another set of servers, running Unix or Microsoft Corp.'s Windows NT, that will act as front ends for a suite of decision-support applications.

In early 1996, Levy plans to purchase a decision-support software package for use by store managers and headquarters staff.

"We are taking everything that we have and calling it a data warehouse," Levy said. "And then we're buying a whole new warehouse full of tools, spreadsheets and word processors. We're going to make it an annex to our old warehouse so that we can let our PC users get access to the corporate information base."

Transparent to customers

The business benefits of the new store systems will be immediate, said Chief Financial Officer and Chief Operating Officer David H. Edwab, who is based in Fremont, Calif. "If the telephone lines are down, they'll still be able to maintain customer service because the smart terminals will be able to continue processing off-line," he said. "That way, customers need not be aware of any technical problems," Edwab said.

Store managers will gain more control over their queues to the host server's data and will be able to launch real-time queries against customer-profile databases. "We're pushing decision support further down into the organization than before," Levy said.

Men's Wearhouse has 3,000 employees, and in fiscal 1995, revenue grew 40%.

Business managers using decision-support tools will be able to analyze sales data in a more timely fashion from about 100 Windows-based PCs. "What we're looking for is the ability to evaluate marketing as well as merchandising information," Edwab explained. "We would like to see what types of customers in what areas are buying what types of suits. We might want to know how many customers buy white shirts or blue shirts with every suit they buy."

Easy and efficient

Ruben Rodriguez, store manager at the chain's largest Houston store, who has seen store system plans, said the Unix PCs will be easy to use and may reduce training costs. The PCs may even have touch screens for menu selection and be able to ring up sales through the use of bar codes on tags.

"We're trying to cut back on inputting," he said. "We want less typing. It makes it easier for the person who uses the computer, and we think there will be fewer mistakes." That can add up to real savings, Edwab said, noting that the chain already has a low 0.5% of sales "shrinkage" — the amount of sales that must be subtracted from the total due to human error.

For all its benefits, the transformation was not without its challenges, said software development manager Eric Lundblad. At first, developers tried to move too much processing work to local sites — and away from the hard-working central server.

"Our original intent was to offload a lot of work onto the PC, but we ran into bottlenecks as we implemented client/server applications," Lundblad said. "We ran into the same issues everybody runs into." These include concerns about client/server performance and record-locking on a shared database — and the need to replicate timely data to all sites. And while managers praised UniVerse as extremely efficient, IS found there were fewer packaged applications ready to support it than several brands of relational databases.

NT pushes forward

Forrester Research predicts that Windows NT will hit the 200,000 mark in 1996 in terms of worldwide unit shipments at the server level.

Services Digital Network video-conferencing link. NTT is testing and using the teleconferencing system while it evaluates the market for the product.

In the works

Other efforts under way in Japan include Macintosh's PilotMail, an informal workflow application, and a group idea processing system that Fujitsu is designing. In addition, NEC Systems Lab is using a variety of soft techniques internally to increase creativity, Pal said.

SRJ's research on Japan industries work done by SRJ Tokyo on organizations and groupware, international projects looking at Japanese organizational cultures, a study of collaborative technology environments and work with Japanese vendors on groupware product development.

Hechler writes for the IDG News Service in London.

ON SITE

The Men's Warehouse, Inc.

Challenge: To give stores the ability to operate independently of central systems in the event of network outages.

Solution: UniVerse, a multi-user, multi-tasking, distributed database system running on the central Data General Corp. Avion server and data warehouse.

Results: Realtime retail scheduling for February, starting with 15 Houston-area stores.

Briefs

SAP launches program

SAP America, Inc. recently launched a vertical market program called Industry Centers of Expertise. It will be aimed at three segments: high technology, oil and gas and utilities. SAP will offer customized versions of its client/server R/2 and mainframe R/2 software to these customer groups.

Kurzweil, Novell team

Kurzweil-Peck Inc. in Palo Alto, Calif., has slashed 20% off the price of its 10/100VG AnyLink 100Mbit/sec. adapter cards. Pricing for the cards now starts at \$225.

software products from WordPerfect, the Novell Applications Group.

SunSoft adds PC-X

SunSoft, Inc. said it is adding PC-X software to its SolarNet PC administration software for Unix servers that will allow PC users to access those Unix servers through a point-and-click interface. Pricing for the SolarNet PC-X module starts at \$545 per user.

Hewlett-Packard slashes prices

Hewlett-Packard Co. in Palo Alto, Calif., has slashed 20% off the price of its 10/100VG AnyLink 100Mbit/sec. adapter cards. Pricing for the cards now starts at \$225.

Workgroup Computing

Brio Technology, Inc. has announced BrioQuery, a desktop query, analysis and reporting tool for data warehouses.

According to the Mountain View, Calif., company, BrioQuery focuses on data analysis by providing a multidimensional analysis tool as part of the ad hoc SQL query system. Features include a graphical query request builder, a one-step, band-style reporter and high-level scripting for building desktop executive information systems.

The product comes in three options: Designer, which lets data managers create and deploy Brio Data Models; Navigator, which lets users start constructing queries from Brio Data Models rather than directly from the database; and Explorer, for users who do not require layers between data and users.

BrioQuery Explorer and Navigator cost \$346, and Designer costs \$2,495.

► **Brio Technology**
(415) 967-4110

Systech Corp. has announced Systech Premium, backup and recovery software for OS/2 workstations and network servers.

According to the Westboro, Mass., company, Systech Premium includes a multiple event scheduler and optional device support for autodiskers. An autocompare feature checks all backed-up files, a gross option removes older files from the hard disk, and error-correction code lets users recover files from damaged backup media.

Systech Premium costs \$199.
► **Systech**
(508) 866-0100

HawkNet, Inc. has unveiled NetTune Pro, artificial intelligence-based server tuning software. According to the Carlsbad, Calif., company, NetTune Pro lets administrators rely on AI to perform dynamic tuning across Novell, Inc. networks.

The product detects high-volume server utilization patterns that lead to poor network performance, then makes real-time automatic adjustments to the more than 60 internal set parameters on Novell NetWare systems.

NetTune Pro costs \$895 per server.
► **HawkNet**
(619) 929-9669

On Demand Software & Services, Inc. has announced the LAN Printer Switch

3.0, a universal LAN printer selector for Windows.

According to the Naples, Fla., company, LAN Printer Switch 3.0 lets users attach and detach network printers; local printers and fax boards without knowing queue names or network addresses.

The product, which is integrated with On Demand's Wininstall 4.0 network software distribution product, provides printer configuration checks and automatic configuration adjustments.

LAN Printer Switch 3.0 costs \$395 per server.

► **On Demand Software & Services**
(813) 261-8678

Evergreen Systems, Inc. has announced Casperver 2.1, a communications server.

According to the Novato, Calif., company, Casperver 2.1 features Data Encryption Standard security features, TCP/IP support for access to the Internet and enhanced server capabilities.

The product was designed for telecommuters, and the security features eliminate the need for a stand-alone security box for each incoming dial-up line.

Server management capabilities include auditing and logging connection and diagnostic activity and grouping this activity into event classes.

Prices start at \$6,395.
► **Evergreen Systems**
(415) 897-5858

Announcing COMPUTERWORLD CD

on every week in printed form... the exciting technology of CD-ROM. Just think, four years of COMPUTERWORLD at your fingertips... no more piles of back issues in the corner, no more frantic searches through pages of newsprint... years of COMPUTERWORLD ready for searching, analyzing, cross-indexing and competitive analysis.

Here's What You Get When You Subscribe

- Over four years worth of full text articles from COMPUTERWORLD.
- Selected graphics from each issue showing industry trends, product comparisons and more.
- Articles from COMPUTERWORLD's annual *Premier 100* and *Computer Careers* magazines.
- Detailed information from the *Premier 100* - data about IS budgets, profit growth, total scores and company highlights about all the Premier 100 companies.
- Over five years worth of articles from the *Journal of Information Systems Education*, published by DPMA's Special Interest Group on Education (EDSIG).
- Annual subscription includes four discs updated quarterly.

COMPUTERWORLD CD Helps You:

- Search comprehensive product and vendor information quickly.
- Follow critical technology trends.
- Analyze top company IS profiles.
- Execute key word searches on any topic in seconds.
- Eliminate mass paper storage.

COMPUTERWORLD CD operates on PC (DOS and OS/2), Mac, and Windows environments.

Subscribe today and become a charter subscriber for just \$295. You save \$100 off the regular annual subscription rate of \$395.

Don't miss this opportunity to have quick access to the most powerful news source on information systems.

To order call:

1(800)285-3821

Save
\$100

What users like about COMPUTERWORLD CD:

"It can look up products and company names... indispensable."

"...finds product information and client information quickly."

"...full text, good graphical start for each article."

"Can search across multiple issues and find the thing I'm looking for. Makes life easier."

"The sheer volume of what's in it. Easy access without having to go to a library service."

"It has information not found on Computer Select."

Source: Survey of COMPUTERWORLD subscribers, May 1993.

All trademarks are property of their respective owners.

CD12-19

SAVE

MONEY RECRUITING STAFF

ADVERTISE IN
ComputerWorld's
REGIONAL CAREERS PAGES.
THEY WORK.

1-800-343-6474, x201

Call for our free
guide to **Recruiting Tools**.



Emerging Technology Applications
An ETA Company
111 Sycamore Street, Framingham, MA 01701



BeyondMail

Introducing e-wide e-mail.

An enterprise e-mail system has to deliver more than messages. Users want an interface that's customizable and easy to navigate. And management is looking to the e-mail front end to leverage a sizeable investment in messaging infrastructure.



It runs with
NetWare

BeyondMail® 2.0 comes through on all counts. It's a user's fantasy come true, with a fully customizable interface, a rich text word processor (with spell check), and convenient viewers to read and print attachments. Plus private address books, message encryption, standard office forms, and a suite of time-saving

MailMinder® features to automate and simplify mail handling. In addition, BeyondMail's powerful scripting language offers a robust platform for mail-enabled workflow applications — within departments, or across the enterprise. Integration with line-of-business apps, mail-enabled database access, custom forms and more.

BeyondMail plugs into multiple back end transports, including GMHS and MHS for NetWare®, MHS for non-NetWare LANs, and Banyan Intelligent

Messaging™ Windows® and DOS® versions are available, with Macintosh® and UNIX® versions coming soon. Remote users can also dial into the net with BeyondMail Remote.

Introduce yourself to e-wide e-mail with a free working demo. Call 1-800-828-2404.



Banyan and the Banyan logo are registered trademarks and BeyondMail and MailMinder are trademarks of Banyan Systems. Other trademarks are property of their respective owners.

Call or write for our free Enterprise Networking Kit,
including a free BeyondMail working demo.

Name _____

Company _____

Address _____

City _____ State _____ Zip _____

1-800-828-2404

Banyan Systems Inc., 125 Franklin Rd., Westboro, MA 01581



Enterprise Networking

TOOL KITS IMPROVE
INTERNET SECURITY, \$50
NEW PRODUCTS, \$5

Gary H. Anthes

Egad, more junk E-mail



People are always asking, "What's the next killer app?" That's easy — electronic-mail filters.

I mean really smart ones, such as the sophisticated neural network I use to sort my paper mail when I get home from work.

Here's the algorithm I use: Throw away unopened any mail that has "Free gift!" or "You may already have won \$1 million!" printed on it. Toss envelopes from unknown senders unless the address is handwritten. Deep-six any mail on which my name is misspelled. Discard the catalogs, but first thumb through the one from Victoria's Secret. Leave any items that can be identified as bills in the kitchen table for my wife.

What passes through those filters — maybe 10% of my mail — gets opened and read.

Fairly efficient

Sure, I occasionally make mistakes, and my power is cut off in the middle of the night because I haven't paid the electric bill in six months — or my 350 theater tickets end up in a landfill under someone's tuna sandwich. But for the most part, this algorithm is effective and efficient. As far as I know, I have never forced a real \$1 million prize.

The trouble is, my algorithm for filtering E-mail is not similarly honed by decades of junk-mail abuse. Faced with a long list of messages, I read the ones from people I know and like and those that have interesting subject lines. Or I read them until it's time for lunch. Then I type "delete all."

"Delete all" does just what you would expect. It is Microsoft's digital neutron bomb, a scorched earth command for cyberspace. But I love it. Just as I enjoy tossing away that envelope advising "occupant" of a new drycleaning service, I enjoy nuking that message broadcast from a remote office warning that someone left his lights on in the parking lot three days ago.

The perfect filter

Existing "filters" are not nearly sophisticated enough. They can look at the message date, originator and subject line and put your mail into folders — or into a digital dustbin. What I need is a software agent smart enough to perform these kinds of chores:

- Highlights a message from my boss containing the phrase "performance bonus," but throws it in the bit bucket if it contains the phrase "go to Comdex."

- Deletes press releases whose byline level exceeds a user-specified limit. This might be done by counting phrases such as "state-of-the-art solution" or looking for new products whose ship date is more than 60 days hence.

- Returns to sender with a user-specified tact report any mail that violates a丝毫洁度 test. Real example: E-mail sent to me in Washington saying the Massachusetts office is bring in pizza for lunch.

This column will probably elicit replies from vendors claiming to have products that do these things. But I won't bear them. I'll toss away their mail unread.

Anthes is a senior editor at Computerworld's Washington bureau. His e-mail address is gathes@mcmail.com.

Novell, Microsoft face off

Users compare NetWare 4.1 with Windows NT Server 3.5

By Laura DiDio

Strip away the vendor hype, and users and analysts are left with little doubt about what they perceive as the clear-cut comparative strengths and weaknesses of Novell, Inc.'s NetWare 4.1 and Microsoft Corp.'s Windows NT Server 3.5.

In general, NetWare 4.1 is considered a communications server with advanced disk compression features and full-blown directory services for enterprise-wide networks. NetWare 4.1, however, comes up short as an applications server, users and analysts said.

By contrast, Microsoft bills NT Server 3.5 as a superior applications server better equipped to run 32-bit applications. NT Server 3.5 is equipped with just a basic domain directory facility. It does boast support for multiple hardware platforms, including Intel Corp.'s Pentium and RISC-based machines and Digital Equipment Corp.'s Alpha systems.

Two different techniques

NetWare 3.5 also incorporates built-in value-added features such as TCP/IP support, front-end messaging and groups are scheduled features and Internet access. Novell also has these features but sells them as options at additional cost, while Microsoft bundles them into the base price of the network operating system.

"NetWare 4.1 and Windows NT Server 3.5 are like two sides of the same coin. Each has what the other lacks," said Rich Edwards, a senior analyst at Robertson Stephens & Co. in San Francisco. "NT Server 3.5 is an applications and communications server, with no enterprise-wide directory services, and NetWare 4.1 is strictly a communications server without

being an applications server except for the database [NWLM, NetWare Loadable Modules] it supports."

Dan Ramos, chief of development at the Orlando Health Care Group in Orlando, Fla., said that while both the Novell and Microsoft offerings are "great operating systems," his firm opted for NT Server 3.5 based on its scalability, multiprocessor support and visibility as an applications server.

"Since we also selected Microsoft's SQL Server database, by choosing NT Server 3.5 we get the added value of tight integration between the [network operating system] and the applications," Ramos added.

Side-by-side with NetWare 4.1

Businesses with multiple sites spread out over a large geographic area most often cited their legacy investment in Novell and the availability of NetWare Directory Services (NDS) as reasons for going with NetWare 4.1.

"Our shop is 100% NetWare. We've got 1000 NetWare nodes throughout North America; directory services is a key concern for us," said John Verreault, supervisor of technical services at Hoechst Celanese, a pharmaceutical, chemical and textile company in Montreal.

Verreault acknowledged that he tested NT Server 3.5 and liked it. But he said Hoechst Celanese will stick by its commitment to NetWare 4.1 as the corporate network operating system, although it may deploy NT Server 3.5 in niche departmental networks throughout the organization to take advantage of its remote and Internet access capabilities.

If there is one constant in the user base these days, it is its willingness to ignore vendor marketing hyperbole and chart its own course. Postures that vendors

Face-off, page 57

Carriers receive SMART advice

By Suresh Mohan

■ A group of large corporate users, telecommunications service providers and equipment suppliers is trying to hammer out some network interface and application issues.

Known as the Service Management Automation and Re-engineering Team (SMART), the group wants to make it easier to manage systems and processes. At a meeting in October under the aegis of the Network Management Forum (NMF), SMART attendees formed three work teams that will reconvene in January to compare notes.

The aim of SMART is to "help the carrier industry articulate requirements to suppliers," said Mary Johnson Turner, principal at Northeast Consulting Resources, Inc. in Boston. Carriers are extremely demanding in their requirements for equip-

ment because of their transaction processing and scalability needs. Manufacturers need to know what specifications to build their products around, as they cannot afford to meet the individual requirements of each carrier.

To meet the carriers' common needs, the work teams within SMART will focus on getting a consensus in the areas of trouble ticketing, performance reporting and ordering equipment, according to Beth Adams, managing director of the NMF in Mountain View, Calif.

The trouble ticketing process is largely manual, so the working group is trying to automate this process of reporting troubles between service providers and customers such as banks and oil companies. The regional Bell operating companies and long-distance carriers are already using OmniPoint 1.0, an NMF management standard that has been around for SMART, page 50

Tool kits promise improved Internet security

A semi-regular column with items of interest and answer from the Internet.

Top of the page

It's become an old saw: Security or lack thereof, is the key obstacle to the quick commercialization of the Internet. Thus, it was especially significant at the recent Internet World in Washington that Terisa Systems in Menlo Park, Calif., announced several services for its \$5,000 Secure Web Toolkit for World-Wide Web Transaction Security. Terisa was launched in June by RSA Data Security in Redwood City, Calif., and Enterprise Integration Technology in Menlo Park, Calif. The tool kits will be licensed to Seattle-based software vendors Spyre and Sygnosis, and several makers of client-server software. Competing schemes for secure transactions will continue as well, but it's nice to see the software industry starting to coalesce around common tools.

Speaking of coalescing, the Top 3 commercial data networks are engaged in a fascinating footrace. The following has occurred during the past few weeks:

- America Online acquired essentially

all the assets of Advanced Network & Services, the National Science Foundation's NSFNet backbone operator. The \$35 million acquisition is expected to reduce America Online's network overhead expenses while at the same time let it offer higher-speed connections. Indeed, America Online said it will offer speeds of up to 28.8K bits/sec. as well as Integrated Services Digital Network access next year.

• CompuServe announced a nonexclusive distribution and consulting arrangement with Spyre. Under the deal, users of Spyre's Internet in a Box, a software package for dial-up access, will be able to log on to the Internet via CompuServe's extensive public network, which has some 400 points of presence worldwide. For this service was not disclosed. In addition, CompuServe Network Services will begin reselling Spyre's Internet Office and AOL Series IP software tools; the two companies will offer consulting and server maintenance services to consumer retail clients. Meanwhile, CompuServe announced the availability of File Transfer Protocol (FTP) to Internet sites.

• Prodigy in White Plains, N.Y., announced the availability of World-Wide Web access via its commercial service. It is the first on-line provider to do so. Several thousand Prodigy members began testing the feature earlier this month. America Online and CompuServe are expected to follow suit later this year and early next year, respectively.

New sites

The Institute for Information Management at the University of St. Gallen, The site focuses on information management in business and administration. Its address is <http://www-iwi.usi.ch/50/about/index.html>.

Clark Development, Hayes Microcomputer Products, Rockwell International, U.S. Robotics and other companies formed an association to represent manufacturers of on-line systems. Called the Association of Online Professionals (AOP), it is intended to support and represent individuals who manage bulletin board services, commercial on-line systems, corporate information systems, libraries and the Internet, in a statement. AOP founders said they were "alarmed by the strong regulatory environment in Washington and by largely negative coverage in the mass media." Steve Klinger, general manager at Clark, said, "The on-line industry... faces the very real threat of being taxed or regulated right out of existence." Send electronic mail to AOP at membership@aoe.org.

New products

MicroMind, Inc. last month announced the availability of SlipKnot Version 1.0, a graphical Web browser specifically designed for Windows users who have Unix

shell accounts with their service providers. Although unable to handle fill-in forms, SlipKnot does not require Serial Line Internet Protocol, Point-to-Point Protocol or TCP/IP services. The shareware product can be fetched via anonymous FTP at <http://sok.oakland.edu/SimTelWin/internet/SlipKnot/00.zip> as well as many mirrored sites. Micromind requires a \$29.95 registration fee.

For fun

Christmas sites on the 'net: Unwrap this seasonal list of Web locations spreading Christmas cheer at <http://www.moe.ac.uk/~xmas/christmas.html>.

Cafes in the your neighborhood closed? Take a look at the Cyber Cafe Guide. Pour yourself a cup of virtual java at <http://www.eaynet.co.uk/90/pages/cafe/cafe.htm>.

Tips and such

The explosive growth of Web sites—which we estimate may reach 50,000 by the end of next year—is nicely monitored by the National Center for Supercomputing Applications What's New Page. It was the winner of "Most Important Service Concept" in the Best of the Web '95 Awards earlier this year and is a definite must for your browser's hot list. What's New is a joint production of the center and the Global Network Navigator from O'Reilly & Associates. Updated three days a week, What's New currently receives 200 submissions per week, according to its creators. You can reach it at: <http://www.ncsa.uiuc.edu:80/SDG/Software/Mosaic/Doc/whats-new.html>. —Elliott Bookner and Gary Antunes

We'd like to hear from you. Send news, questions or comments to ellis@uiuc.com.

SMART

CONTINUED FROM PAGE 4B

about two years. But now the group is trying to tailor it to service providers' customers.

Likewise, performance reporting standards exist for interaction among providers. The group is working on performance reporting between providers and users. This will focus on what kind of information customers want to report and what terms they should use, so both sides have a common reference point.

"Businesses are seeking to save cost and be more efficient," said Keith Willets, a group development manager at BT in London. "The problem is reengineering is: How do you do both?" Willets said he hopes the SMART initiative will help set up some common standards that manufacturers, providers and customers can adhere to.

Computerized interaction among large companies requires standardization of procedures. For example, corpo-

rations such as banks frequently span a number of corporate boundaries and technologies, said Ken Clamp, chairman of the user advisory council for the NMP and a management consultant at National Westminster Bank in London. To measure anything, even the quality of service, corporations have to deal with different standards.

Revision needed

"There's a need to automate and re-engineer the management process," Clamp said. For example, procurement orders should be available on-line, with a standard format for placing orders and rules for the behavior of a service order when it crosses boundaries between the service providers and users. When the infrastructure fails, users want information—the trouble ticket—in a standardized format.

Carriers will recognize the benefits of this approach immediately, Turner said. Other kinds of corporate users, however, will have to wait at least two to three years before the benefits percolate down to them, she added.

Novell, Microsoft face off

CONTINUED FROM PAGE 49

touted as strengths were often downplayed by users.

For instance, while Novell knocked Windows NT Server 3.5's lack of directory services, some users said they preferred the more basic domain structure of NT Server.

"I find the domain structure of NT Server 3.5 just as comprehensive as NDS," said Steve Sommer, MIS director at Hughes Hubbard & Reed, a law firm in New York. "It makes it easier for me to allocate resources and configure the network without going through myriad steps to add individuals or groups of users."

Conversely, the criticism Microsoft has lobbed at NetWare 4.1 for its inability to be an applications server suits some network managers just fine.

"I do see NT Server 3.5 as more of an applications server than NetWare 4.1. But when it comes down to it, I prefer to have my applications reside on a separate server, so if it crashes, it doesn't take the entire network down," Verreault said.

Lee Doyle, an analyst at International Data Corp. in Framingham, Mass., said the battle between NetWare 4.1 and NT Server 3.5 will not be decided in the short term.

"For a change, users are calling the shots. They can afford to be patient and play a waiting game to get the best deal for their companies, while Novell and Microsoft knock themselves out to get their business," Doyle said.

Surf's up

Novell predicts that the elimination of price premiums and aggressive initiatives with its resellers will result in a tidal wave of users migrating.

"So if it crashes, it doesn't take the entire network down," Verreault said.

Lee Doyle, an analyst at International Data Corp. in Framingham, Mass., said the battle between NetWare 4.1 and NT Server 3.5 will not be decided in the short term.

"For a change, users are calling the shots. They can afford to be patient and play a waiting game to get the best deal for their companies, while Novell and Microsoft knock themselves out to get their business," Doyle said.

Users stand to win this battle

Users acquiring either NetWare 4.1 or Windows NT Server 3.5 are the big winners in the ongoing Novell vs. Microsoft marketing

"These days, users can expect to pay an average of 20% to 30% less for NetWare 4.1 and Windows NT Server 3.5 thanks to midcourse correction changes in pricing recently undertaken by both companies."

Users said the dissolution between the companies is paying off in dollars and "sense" for them.

Users' advantage

"I've been able to use the competition as a bargaining chip to get better pricing deals for our law firm," said Steve Sommer, MIS director at Hughes Hubbard & Reed. "We also have available to have more integration with Microsoft in the host and functionality. I'd like [to see] in NT Server 3.5 and the desktop software."

In September, Microsoft unburdened its server and client license prices. This lets businesses "pay as you grow, buying what they actually need, down to single mail copies," said Mike Nash, group product manager of Windows NT.

Similarly, Novell decided to trim the tags on NetWare 4.1, making pricing virtually equal to NetWare 3.x and giving users a big inducement to upgrade.

However, there is a disparity in the Novell and Microsoft price structures worth noting. Straight comparisons are difficult because Novell quotes list prices, Microsoft, meanwhile, gives out street prices, which typically range from 20% to 40% below list prices, depending on the volume of the purchased order.

Novell does do volume discounts. Large volume licensing agreements customers, for example, can expect to pay 20% to 40% below list price, said William

Danaher, Novell's director of product marketing.

"And with NetWare 4.1, we let users purchase the software in increments ranging from five to 1,000 user increments," Danaher said.

Takes note

Smart shoppers will make lists and compare.

Retail-price-client licenses for NT Server 3.5 cost \$80.00 each and \$600 for a single-server license. An entry-level five-user NetWare 4.1 pack retails for \$1,000.

Street pricing on a 10-user version of NT Server 3.5 is \$1,600, while Novell's list price for 10-user NetWare 4.1 is \$2,400. In 100-user versions, NT Server's retail price is \$3,200, and NetWare lists for \$2,000. A 500-user version of NT Server has a street price of \$15,510, while the corresponding NetWare 4.1 package lists for \$24,000.

—Zevina DADio

If this button could help your business reduce costs, increase productivity and improve information access, would you want one?



TCP/IP Applications For Windows.

Network Your PC To The World With Chameleon.



APPLICATIONS INCLUDED:

Terminal Emulation

Telnet: VT100, VT200, TTY,
TN3270, TN5250, Visual Script
Editor and Player

File Transfer and Printer Sharing

FTP Client and Server
TFTP
LPR/LPD

NFS

Electronic Mail

SMTP Mail with Mime
Phone Tag
Windows interface to IBM
PROFS mail

Internet Access

Gopher
Newsreader
Whois

Network Utilities

Ping
Finger
DNS Client and Server
Networking Tools
TCP/IP Stack
Diagnostic Center/Trace
Agent
Custom

BEST VALUE.

Chameleon is a TCP/IP Windows software suite that offers more applications than any other product. It provides you with a comprehensive Windows solution for TCP/IP networking.

SEVEN INTEGRATED SOLUTION SUITES.

Chameleon includes seven integrated solutions suites: terminal emulation, e-mail, file and printer sharing, remote access network utilities, administration tools and an easy point-and-click interface into the Internet.

SEAMLESS ACCESS TO OTHER HOST SYSTEMS.

Chameleon includes more applications

that allow you to access information on Unix networks, mainframes, minicomputers, PC-based LANs and WANs, and the Internet.

HOME, OFFICE AND REMOTE INTERNET ACCESS.

Take the hassle out of navigating the Internet with Chameleon's easy-to-use Windows interface. Access Internet resources anytime, anywhere. Search gopher space, read and post to news groups, download shareware, multi-media files and documents all with the click of a button.

NetManage Chameleon includes WinSock TCP/IP and is 100% DLL. Chameleon requires only 6KB memory and installs in just 5 minutes.



Sept. 1994



Sept. 1994



Sept. 1994

NETMANAGE™

(408) 973-7171

e-mail: sales@netmanage.com

World Wide Web: www.netmanage.com

Enterprise Networking

Ware networks.

The product alerts network administrators with a Windows-based security console that transmits special codes or messages via a modem.

The product costs \$299 per file server.
► **D&G Infocomp**
(310) 538-1240

ISDN-tk has announced the Cyber-Space Internet Card, an integrated Services Digital Network (ISDN) card for Windows and OS/2.

According to the San Gregorio, Calif., company, the CyberSpace Internet Card connects to the Internet using compatible TCP/IP software to support Mosaic, gopher and other applications.

The half-size PC card fits in the Industry Standard Architecture or Extended Industry Standard Architecture bus slot of a PC and comes with a phone cable and two memory disk. Users can perform high-speed data transfers directly among multiple ISDN users.

The CyberSpace Internet Card costs \$299.
► **ISDN-tk**
(415) 712-3000

3DM Systems, Inc. has announced LANWatchMan Provider Detection Systems (PDS) NetWare Loadable Module (NLM), an early-detection system for LAN and WAN security breaches.

According to the Hempstead, N.Y., company, LANWatchMan PDS NLM lets network administrators configure security watch points to monitor key components of the file server on Novell, Inc. Net-

Ware systems. Micro Computer Systems, Inc. has announced NetLink software that links Unix systems with Novell, Inc. NetWare networks.

According to the Irving, Texas, company, SBCC-2 offers three primary connectivity features: terminal emulation, file transfer and application development.

NetLink provides Unix systems with IPX/SPX-compatible protocols, application programming interfaces and terminal emulation.

Prices start at \$895.
► **Micro Computer Systems**
(214) 658-1624

EMD Enterprises has announced 3DM-armor antivirus software.

According to the Towson, Md., company, ROMMarin is an 8K-byte read-only memory chip that plugs into existing memory boards and adds read-only memory sockets on network interface cards.

The product detects the presence of boot viruses as soon as they attempt to access the system by installing itself as

an extended BIOS before the system accesses the boot system disk.

Special signatures are included to reduce false alarms.

ROMMarin costs \$49.
► **EMD Enterprises**
(410) 583-1670

Radiotek Technology Corp. has announced SBCC-2, a modular VMEbus communications controller.

According to the Montvale, N.J., company, SBCC-2 provides up to 32M bytes of dynamic RAM and up to 4M bytes of ROM memory.

The product includes four primary serial communication channels that each provide simultaneous support for different communications protocols.

Prices start at \$2,695.
► **Radiotek Technology**
(201) 391-5700

Adax, Inc. has announced the Universal Frame Relay Access Device (UPRAD) for AIX, an application server for the IBM RS/6000.

According to the Berkeley, Calif., company, UPRAD for AIX integrates a network interface card and frame-relay software and lets Unix-based application servers provide frame-relay access and switching.

The product supports line data rates up to T1/E1 speeds and features concur-

rent support for both frame relay and Point-to-Point Protocol.

Prices start at \$600.
► **Adax**
(310) 549-7047

Mustang Software, Inc. has announced a network version of its QmodemPro for Windows communications software.

According to the Bakersfield, Calif., company, the network version of Q-modem Pro for Windows lets up to five users simultaneously access the software's data transmission capabilities.

The product supports Novell, Inc.'s Network Asynchronous Communications software, so users on workstations not equipped with modems can access network modems.

The product includes IBM 3270 terminal emulation.

The product costs \$399.
► **Mustang Software**
(805) 392-0223

Product alert

Advanced Computer Communications (ACC) has announced RiverView, Simple Network Management Protocol management software that lets users configure ACC's bridge and router products and monitor data flow and system performance. Cost: \$1,495. ACC, Cupertino, Calif. (408) 366-0650.

The grid contains nine small images, each representing a different business application:

- Top-left: A computer monitor displaying a "HELP WANTED" sign and the text "HR: Employment Statistics".
- Top-middle: A computer monitor displaying a "Cost Control Analysis" report with a hammer icon.
- Top-right: A computer monitor displaying a "Bigest-Spending Customers" report with a large dollar sign icon.
- Middle-left: A computer monitor displaying a "Customer Service Records" report with a telephone handset icon.
- Middle-middle: A computer monitor displaying a "Billable Kilowatt Hours" report with a power plug icon.
- Middle-right: A computer monitor displaying a "Regional Sales Report" with a map icon.
- Bottom-left: A computer monitor displaying a "Manufacturing Inventory Report" with a factory icon.
- Bottom-middle: A computer monitor displaying a "Financial Statement" report with a bar chart icon.
- Bottom-right: A computer monitor displaying a "Marketing Plan" report with a globe icon.

Why settle for just one?

How about a button for that weekly production report? A list of your biggest-spending customers? A chart comparing sales at the regional offices? It's easy with Andyne GQL—the only client/server data access tool that makes all your ad hoc queries and reports as easy as the push of a button.

Andyne GQL. Data access, right on the button.

Andyne

For your free demo disk, call 800-267-0665 (in North America); or call 613-548-4355; fax 613-548-3608; Internet: sales@andyne.on.ca; www http://www.andyne.on.ca/
All Andyne products are trademarks of Andyne Computing Limited. Andyne products are available worldwide.

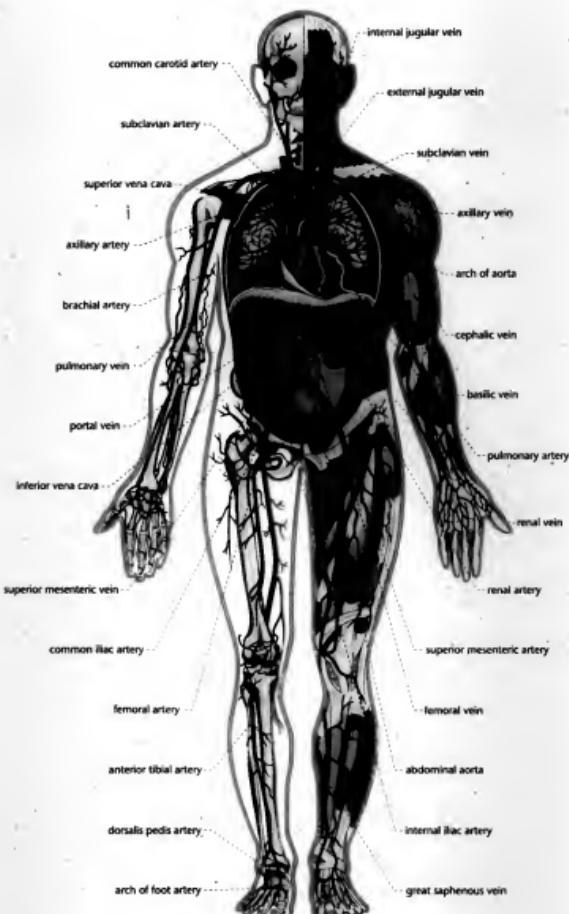
Fortunately at Pennant™ The IBM Printing Systems Company, we concentrate on the circulation of your information as if your company's life depended on it.

Because it does.

So to improve your information flow, we're redefining printing. You see, we use the word "printing" rather loosely. To us, it's the presentation of information. Through local area networks that work with personal computers and mainframes. Distributed

printing with centralized control of logos, signatures and data. And on-demand publishing.

We also provide a dose of preventive medicine. By getting your information in shape well before you need to print it. With electronic annotation. Archiving and retrieving. On-line viewing. So you see information on the screen exactly the way it appears in printed form. (Call up a customer's bill, see a customer's bill exactly the way it was printed, logos and all.)



Even if your work flow skips a beat, we keep it moving. If a printing error occurs, you can immediately identify the problem, fix it and pick up the job right from where you left off. That alone could save you a cardiovascular scare or two.

Of course, when it comes to putting marks on paper, no company offers you more printing system options than Pennant. And every one is backed by service that's available 24 hours a day, 7 days a week, 365 days a year.

All told, we're there for you every step of the way, from the management and distribution of information right down to the printed page.

Call 1-800-PENNANT and we'll send you some more information.

You'll find reducing the amount of stress on your printing system reduces the amount of stress on other, more important systems as well.

**THE INFORMATION IN YOUR
COMPANY ALSO HAS TO CIRCULATE.
AND HAS SIMILAR
CONSEQUENCES IF IT DOESN'T.**

Redefining Printing.[™]

The IBM Printing Systems Company

COMPUTERWORLD's Code of Ethics

1. Computerworld's first priority is the interest of its readers.
2. Editorial decisions are made free of advertisers' influence.
3. We insist on fair, unbiased presentation in all news and articles.
4. No advertising that simulates editorial content will be published.
5. Plagiarism is grounds for dismissal.
6. Computerworld makes prompt, complete corrections of errors.
7. Journalists do not own or trade in computer industry stocks.
8. No secondary employment in the IS industry is permitted.
9. Our commitment to fairness is our defense against slander.
10. All editorial opinions will be clearly labeled as such.

The Computerworld News Service
Volume 10 Number 10 October 1986 \$1.99

COMPUTERWORLD

PC software takes next step

Desktops to mobile workstations

Industry turning to computerized

Proven handi's guide Novell

Oil pilot strikes savings

Making the strategic choice

IBS turns to imaging to improve performance

WORDS WE LIVE BY.

When you pick up a copy of *Computerworld*, you know you're getting the most objective, unbiased news and information in IS. Our code of ethics guarantees it.

Why do we make such a big deal out of editorial integrity?

Because the words you read in *Computerworld* often have a dramatic impact on your business, your career, and your future.

You use this information to evaluate new products. To get a candid view of emerging technologies. To find out the inside story on corporate strategies. To decide whether to jump ship or stay in your current job. To get the edge on your competition.

In short, *Computerworld* is filled with the words IS professionals like you live by.

WORDS YOU WORK BY.

Week in and week out, our editors and reporters call it the way they see it – on issues ranging from network management to reengineering. They dig deeply to bring you the most accurate, comprehensive news in IS.

It's no wonder over 139,000 IS professionals pay to subscribe to *Computerworld* every week. Shouldn't you? Order today and you'll receive 51 information-packed issues. Plus, you'll get our special bonus publication, *The Premier 100*, an annual profile of the leading companies using IS technology.

Call us toll-free at 1-800-343-6474. Or use the postage-paid subscription card bound into this issue.

You'll get the kind of straightforward, impartial reporting you can work by. You have our word on it.

COMPUTERWORLD

Large Systems

MEMOREX TELEX ENTERS
NETWORK STORAGE ARENA, 58
DIGITAL ADDS LONG-DISTANCE
CLUSTERING TO OPENVMS, 59

Distributed computing

Unix middleware unifies resources

By Jean S. Bozman

Scheduling batch jobs was easy in the mainframe world. Operating systems rationed out the system's resources, and work was submitted for processing in an orderly fashion.

That is not the case in the unruly world of client/server computing where users try to make networked Unix servers into industrial-strength engines that run down-sized mainframe applications.

But Unix middleware is being put to use by Platform Computing Corp. in Toronto as a way to make hundreds of Unix workstations into one unified system resource. Platform's Load Sharing Facility (LSF) 2.0, released last month, was tested at more than a dozen beta sites as an enhanced version of the small firm's 1992 product. It is similar in concept to Network Queuing System (NQS), a freeware Unix utility that handles job queuing for batch work, analysts said.

Like a mainframe

Assigning job processing on the basis of network resources, available cycles and priority is not a new concept. Users at some Wall Street firms, large universities and large oil companies have written homegrown load-sharing middleware for years.

"In large part, it's getting a network to simulate a mainframe," said Terry Bennett, a Unix analyst in Portland, Ore. "You can set up a load-sharing facility that looks at your network and looks for a particular job and at what resources are available to run it."

LSF 2.0 uses a database of system resources to guide the assignment of new jobs to a series of Unix computers attached in the network. Key factors when LSF 2.0 makes an assignment include amount of onboard memory, storage to support paging and swapping during processing and the na-

ture of the unit's operating system.

John Macarin, Platform's U.S. marketing director, said improvements over LSF 1.1 include a better graphical user interface, management of floating licenses for a user's application packages, mainframe-like batch processing and support for some types of parallel processing.

Everything in order

Beta users said they used LSF 2.0 to move scheduled Unix jobs to idle computers and to do so in order of priority.

"We're looking for something on Unix that is close to what we've done on the mainframe for years," said Ed Russell, a computer systems specialist at the Stanford Linear Accelerator in Palo Alto, Calif. "It's really a matter of scheduling the workload. You have finite resources, and you want that to be automated." The company tested LSF 2.0 this fall on 16 IBM RS/6000 Unix machines, Russell said.

One LSF 1.1 user at a large Midwestern manufacturer says the Platform software package supports mixed-vendor networks by loading the proper application software on each target machine.

"We run this universal script as a starting point," said the user, who asked to remain anonymous. "Then that determines what machine the job runs on and loads up the appropriate binaries for the machine that LSF selected. That means LSF knows it must load a Hewlett-Packard Co. version of an application on a target HP server, he said.

Industry analysts say Platform has extended load-sharing methods used inside mainframes and minicomputers — methods that migrated into the NQS utility available as freeware on the internet. NQS technology has also found its way into products from Sterling Software, Inc., IBM and Digital Equipment Corp.

Capacity planners press CPU limits

Service levels, not resource usage, take priority

By Craig Stedman

Some mainframe shops are living dangerously and not feeling at all guilty about it.

With companies trying to hold the line as long as possible on mainframe upgrades, big iron capacity planning is becoming less beholden to the rigid confines of CPU usage measurements. Several capacity planners said they are paying more attention to service levels and not fretting as much about resource consumption.

In fact, they are encouraging system usage readings that would have been considered foolhardy in the past when companies routinely went into upgrade mode once their monitoring software showed 85% or 90% of a mainframe's processing cycles being consumed.

"I used in draw a line of 80% of capacity, but I didn't do that anymore," said Bill Neuser, manager of capacity planning and support at Great Western Bank in Northridge, Calif. "I'm not buying a machine to have 10% or 20% of it sit idle. I'm buying it to use all of the capacity."

Florida Power Corp. in St. Petersburg also started pushing mainframe capacity to higher levels during the past year. "Before, we got worried when our CICS usage went over 85%," said Michael Gresh, a capacity planner at the utility. "But in the current business climate, service levels take a more prominent place."

CPU usage is now allowed to peak in the 80% range, and even if service levels are threatened, management is willing to move some workloads to off hours, Gresh said. He added that Florida Power has avoided a mainframe upgrade since early 1988, although it is now watching the situation closely due to a recent degradation in batch turnaround times.

Mainframe savings

Galileo International, an on-line reservation consortium in Englewood, Colo., also is implementing a new capacity planning methodology based on service levels and response times, according to Paul Quade, director of capital planning and resource management at Galileo.

"We're no longer looking at any individual component and doing planning based on that," Quade said. "You really have to broaden your view and take a look at the end-to-end picture." Galileo's MVS mainframes, which run a hotel and car reservation system, and its batch processing, hit up to 100% usage during a 14-hour period each day, he added.

The new approach does require some load balancing "to spread our work out so that we can run at those levels without a problem," Quade said. Galileo has run into some batch slowdowns during its busy end-of-the-month processing cycle but not enough to cause concern, he added.

The biggest benefit of shifting the focus from CPU usage is the potential it creates for cost

On the level

IS officials list the following pros and cons of basing mainframe capacity planning on service levels rather than on resource usage

Pros:

- Mainframe upgrades can be postponed as long as response times are acceptable
- Fewer CPU resources are left unused, which means greater cost efficiency
- IS emphasis shifts from the hardware to the application
- Closer cooperation is encouraged between IS and end users

Cons:

- Negotiating service-level agreements can be difficult and frustrating
- Lower-priority processing may get bumped to off-hours
- Setting the approach to corporate and IS management may not be easy

savings, the planners said. Companies can delay mainframe upgrades that in the past would have been triggered by high usage levels.

With mainframe prices dropping steadily, buying a little time before upgrading can result in a big payback, Neuser said. Great Western Bank originally expected to pay \$4.5 million for a two-step upgrade from its ES/9000 820 to a 900, he said. Instead, it was able to postpone the whole process and now plans to go straight to the 900 need year at a cost of just \$1.2 million.

Keeping the mainframe at bay has also allowed Florida Power to focus its resources on developing a new Unix-based customer service application scheduled to go on-line in March, Gresh said. "We're trying to make very definite business cases for every dollar we spend" on mainframe upgrades, he added.

Real world view

Paul Mason, a systems management analyst at International Data Corp. in Framingham, Mass., said the service level approach is "becoming a very common topic of discussion" among capacity planners.

"What's driving this is the whole idea that you have to meet user needs rather than just sit at black holes and figure out how powerful the systems is," Mason said.

However, not everyone is comfortable with the idea of running CPUs at high levels. "When we get above 80%, we start watching it pretty closely," said Wayne Pattison, director of data center operations of Kansas City Southern Railway Co. in Missouri. "That's still the line."

But Pattison added that IBM itself has told him that MVS can comfortably support higher workloads than it used to handle.

Memorex Telex expands network storage line

Brings mainframe-based ATLs to Unix users

By Mary Brandel

When it comes to storing network data, some information systems managers do not want to stray very far from data center techniques.

For those users, Memorex Telex Corp. in Irving, Texas, last week opened up its previously mainframe-based automated tape libraries (ATL) to Unix environments, including IBM's AIX and Hewlett-Packard Co.'s HP/UX. Novell, Inc. NetWare support will be announced soon, the company said.

Users can either share the Memorex Telex ATL among the LAN, Unix and mainframe systems, or starting next month they can use the ATL in the network area only using the 9475 ENS Server.

The 5690 SCSI Tape Gateway, which will also be available next month, will enable any SCSI-based host to access mainframe tape libraries.

This enables customers to protect their investment in

current hardware," said Far Yale, an analyst at Dataquest, Inc. in San Jose, Calif. "You're going to see more of this—the ability to utilize that big library for more than mainframe storage."

A developing trend

A number of software vendors, including OpenVision Corp. and New Era Systems Services Ltd., have introduced or announced mainframe-based LAN backup systems.

Hardware vendors such as Storage Technology Corp. and Grau Storage Systems, an E Systems company, also offer ATLs for mainframes and networks. Grau's product enables users to put 4mm or 1/4-in. cartridges in a single ATL, Yale said.

The appeal of such systems is simple: "ATLs are an expensive proposition, especially when you get into 1/4-in. cartridges," said Farid Neema, an analyst at Peripheral Concepts, Inc. in Santa Barbara, Calif.

Automation is another advantage, one user said. "We acquired two robots from Memorex Telex [in 1982] and have almost all operations automated in the mainframe world," said Michel Masson, supervisor of system management ser-

vices at Pratt & Whitney in Quebec. "We wanted the same convenience for the client/server platform."

Pratt & Whitney backs up several gigabytes per day of Unix, OS/2, NetWare and some PC data to a Memorex Telex ATL using Memorex Telex's new client/server Library Management Software.

The technique requires no extra mainframe cycle times. A client version of the software runs on an IBM RS/6000 server and is channel-attached to the ATL. A server version runs on the MVS mainframe, but the data is piped directly to the ATL. "We were CPU-bound, so we didn't want to spend extensive cycles on the mainframe," Masson said.

For users without ATLs who still want to use 1/4-in. tape, Memorex Telex has created the 5450ES, a SCSI version of its 5450 1/4-in. tape drive for DOS and Unix servers.

The 5450ES comes with an automatic cartridge loader, which holds up to 10 tape cartridges equalling 246 bytes of storage.

"With 8mm tape, you can write correctly but get a read error," Masson said. On the mainframe, "as soon as there is an I/O glitch, the system self-corrects," he added.

Memorex Telex introductions			
Product	Availability	Date	
Library Management software for client/server	Now	\$5,000 to \$30,000	
5690 SCSI Tape Gateway	January	\$18,000 starting price	
5450 ENS Server	January	\$15,000 starting price	
	Now	\$20,000 starting price	
Added support for the new disk drives, including NT, SCSI and SCSI Unix support, and increased capacity to 80G bytes	Now	\$20,000 starting price	

Pyramid offering adds ongoing database backup

By Mark Halper

Pyramid Technology Corp. has combined two of its clustering technologies into one package for Pyramid users running Oracle Corp. databases.

At the same time, Pyramid said it is licensing the technology, called Reliant Cluster Architecture, to Veritas Software Corp. in Santa Clara, Calif. Veritas will develop and sell parts of the software for non-Pyramid platforms, according to Judson Grossberg, Pyramid's director of product marketing.

Auto switch

The latest release of Reliant Cluster Architecture allows Pyramid users to continuously access an Oracle database in the event of a single processor crash within a cluster of Pyramid machines.

Previously, if users wanted continuous access protection, they had to purchase Pyramid's Valence lock manager software. Pyramid had added Valence to Reliant, which automatically switches from one failed machine to a working system but requires downtime.

Reliant backs up Oracle and other databases and systems software, but the lock manager now works only on Oracle, Grossberg said. Other database versions are expected to follow from Veritas.

Mem machine

Pyramid is expected to introduce early next year a massively parallel system, code-named Mastodon, that scales up to 256 processors.

The new software is priced at \$30K per user, which represents a marked reduction, Grossberg said. Previously, Reliant cost \$5K per user, and Valence cost \$563 per user, he noted.

Users with constant uptime requirements said they would be interested in the nonstop performance afforded by the new version of Reliant.

"We're going to take a look at it from the standpoint of we're a 24-by-7, 365-days-a-year operation, and we don't like to be down if we can help it," said Gary Thomson, vice president of computer operations and technical support at Silver Springs, Md.-based Choice Hotels International, Inc.

Thomson said Choice is considering turning two separate Pyramid boxes—one for reservation processing and another for reservation support—into two-machine cluster running Reliant. That arrangement would provide nonstop performance to the mission critical reservation processing system, he said.

John Jones, a San Francisco-based analyst at Salomon Brothers, Inc., noted that Pyramid's cluster offering comes at a time when large server vendors such as Compaq Computer Systems, Inc. and Hewlett-Packard Co. are beefing up their clustering capabilities.

Hardcover Book, 548 pages, 98 illustrations

THE POLITICS OF INFORMATION MANAGEMENT

Policy Guidelines

PAUL A. STRASSMANN
AUTHOR OF THE BUSINESS VALUE OF COMPUTERS



THE INFORMATION ECONOMICS PRESS

POB 264, New Canaan, CT, 06840-0264
Phone: 800-800-0448, Fax: 203-966-5506
\$49 + \$4.50 for UPS shipping in the USA.
AMEX, VISA, Mastercard

Large Systems

Digital puts extra miles between clustered sites

OpenVMS' long distance gives users 150-mile span

By Mary Brandel

One way to ensure your computers never fail is to operate them in two places at once. That is what Digital Equipment Corp. OpenVMS users can now do with newly gained long-distance clustering capabilities.

Previously, OpenVMS users could cluster their systems over a 25-mile span using Fiber Distributed Data Interface (FDDI) networks. This method applied to a relatively niche group of campus users who could afford that technology.

Now, customers can use more prevalent

level T3 technology to put 150 miles between their OpenVMS clustered systems. So if an earthquake occurred in San Francisco, for instance, operations could safely continue in Sacramento, Calif.

The high speeds of T3 and the capabilities of clustering mean the systems are synchronized in real time, according to a Digital spokesman.

"We moved half of our clusters to another building just to give us survivability if there were problems in the computer room," said George Durrell, engineer of network systems at Sasktel, the province

of Saskatchewan's telecommunications company. The company uses FDDI, not T3, for its site-to-site clustering.

"When we had separate clusters, we were able to get a level of fault tolerance by mirroring disks within the data center," said Andrew Drobot, network administrator at the Health Sciences Center, a large teaching hospital in Winnipeg, Manitoba. "But if we lost power in that site, we would have lost it all."

With FDDI-based clusters, "the data centers are treated as one logical volume set," he said.

"The need for high availability is growing in leaps and bounds," said Jim Johnson, an analyst at The Standish Group International, Inc. in Dennis, Mass. Tandem Computers, Inc. and Unisys Corp. offer similar long-distance functionality that exceeds Digital's 150-mile limit, he said.

So much more

But site-to-site clustering goes beyond fault tolerance, Digital said. "A lot of customers say, 'What if I had a downtown data center and [an out-of-town] logistics warehouse? I want a situation where I can have [those two sites] sharing data in real time,'" said Nick Carr, senior product manager for OpenVMS clusters.

"It's more than just disaster tolerance," Drobot agreed. For the hospital,

multisite clustering also means increased efficiency. "We've been able to integrate our management domains by managing our two clusters as one," he said.

So while long-distance clusters "are a fairly expensive proposition, you have to look at it in terms of ongoing operational efficiencies," Drobot said.

For instance, the hospital has increased its computer power tenfold during the past eight years but has not increased its staff, partly due to these data center efficiencies, he said.

Other disaster-recovery options, such as hot sites or redundant operations, are more expensive. "This was the only alternative that our institution could afford," Drobot said.

This type of clustering is also complex in terms of installation. "It isn't an application suite where you install it and turn it on," Drobot said. His site has been working on implementation for two months and expects completion in six months. "We're also waiting for a version that's going to support Alpha AXP," he added.

Carr said an Alpha version will be available early next year. In its next version of OpenVMS, also due early next year, Digital said it would add support for wide-area clustering over Asynchronous Transfer Mode networks.

Information Resources, Inc. has announced CoSort 4.0, sort, merge, select and report software for client/server environments.

According to the Cranberry, N.J., company, CoSort 4.0 improves sort throughput by automatically sensing the machine's environment and adjusting the size of the I/O buffers and the number of records in memory.

A utility converts the job control language for an MVS sort to a sort control language file.

Prices for CoSort 4.0 start at \$600.

► **Information Resources**

(610) 851-2815

HipSystems, Inc. has announced Robot/Reports 2.0, report management software for the IBM AS/400.

According to the Minneapolis, Minn., company, Robot/Reports 2.0 lets users convert reports to spreadsheet formats and import the reports into popular PC spreadsheet and database applications.

Users can retrieve individual printed documents and define multiple indexes so documents can be retrieved based on defined criteria. The product supports all IBM-compatible optical disc drives for reading archival.

Prices range from \$4,500 to \$13,635, depending on the AS/400 model.

► **HipSystems**

(612) 943-6999

Andrew Corp. has announced A/T-Access, client software that connects Macintoshes to an IBM AS/400 over the native AppleTalk protocol.

According to the Orland Park, Ill., company, A/T-Access does not require a gateway and supports all features of IBM's OfficeVision/400 word processor.

The product provides IBM AS/400 terminal emulation, IBM 3812 printer emulation and bidirectional file transfer over AppleTalk.

Prices range from \$390 to \$5,695, depending on the number of users.

► **Andrew**

(708) 349-3300

Information Builders, Inc. has an-

nounced Focus Enterprise Data Access/SQQL for Red Brick Systems' Red Brick Warehouse.

According to the New York company, Focus Enterprise Data Access/SQQL enterprise data access software automatically translates Focus code into the native Red Brick Warehouse dialect and takes advantage of Red Brick's sort, join and data aggregation capabilities.

Focus users can extract information and deliver the data for storage into Red Brick's data warehouse environment.

Prices range from \$305 to \$16,055, depending on the number of users.

► **Information Builders**

(212) 736-4433

BCM Software, Inc. has announced Extended Terminal Assist (ETA), software that simplifies the implementation and maintenance of IBM's Extended Terminal Option (ETO) feature in IBM IMS/TS environments.

According to the Houston company, ETA eliminates the need for ETU users to write and maintain user-written code, eliminates IMS restarts and enables customization.

Users can make changes to terminal configurations on-line. Customization features include pull-down menus, and error checking during data entry.

Prices start at \$4,300, depending on the platform.

► **BCM Software**

(713) 918-5990

Cognos, Inc. has announced PowerHouse Fourth Generation Language (4GL) for the IBM AS/400.

According to the Burlington, Mass., company, PowerHouse 4GL lets server applications host multiple platforms with the same interface, giving users a path between terminals and PCs as they migrate to client/server environments.

The product helps developers produce AS/400 terminal applications that contain action bars and pull-down menus. Features include client/server reporting, analysis and application development.

Prices start at \$4,500.

► **Cognos**

(617) 229-6999

Long-distance couples

The new clustering capabilities could enable companies to cluster systems up to 150 miles apart. Sample city pairs include the following:

- Boston/Baltimore, Conn.
- Philadelphia/Dover, Del.
- Louisville, Ky./Cincinnati
- Norfolk/Washington, Va.
- Chicago/San Diego
- Los Angeles/San Diego

Johnson, an analyst at The Standish Group International, Inc. in Dennis, Mass. Tandem Computers, Inc. and Unisys Corp. offer similar long-distance functionality that exceeds Digital's 150-mile limit, he said.

So much more

But site-to-site clustering goes beyond fault tolerance, Digital said. "A lot of customers say, 'What if I had a downtown data center and [an out-of-town] logistics warehouse? I want a situation where I can have [those two sites] sharing data in real time,'" said Nick Carr, senior product manager for OpenVMS clusters.

"It's more than just disaster tolerance," Drobot agreed. For the hospital,

Get results like these when you migrate from an IBM mainframe to Unix.

"We made the scheduled migration date. Could not have done it without Workstation products. Needed capabilities that vi and other products didn't offer - only uni-XEDIT." —Bellcore

"More feature rich than alternatives...the uni-SMP development platform put it head and shoulders above anything else." —Chrysler

"Products were very portable and efficient. We don't believe there is anything else that will do the job." —A.C. Nielsen

"Got our users up on new system instantly. The whole migration resulted in \$1M per year savings. Got applications moved in 4 months. On target and on budget." —G.D. Searle

1-800-228-0255

wrk/grp the business choice
for open systems

the workstation group

VERSION 4.0!
Including InfoMaker

Call 1-800-658-5225 for details.

Memorize
this one.

800-395-3525



There's been a lot of talk about client/server lately. But after all is said and done, the numbers listed on the left add up to one unassailable fact. More organizations are developing and deploying real client/server solutions with PowerBuilder® Enterprise than with any other product. Our customers are creating a whole new class of innovative applications that solve today's critical business problems.

So study the numbers on the left. And then call the one on the right.

Powersoft

Building on the power of people.

Application Development

SYBASE GROWS
GATEWAYS, 63
NEW PRODUCTS, 63

PC databases

Superbase focused on developer niche

By William Brandel

Noting that its competition is taking the "all-things-to-all-users" approach to PC database marketing, Superbase, Inc. is rolling out a product and product strategy aimed at application developers.

Superbase is scheduled this week to deliver Superbase 95, its new PC database application. While the application includes some innovations, it also offers a bevy of features found in mainstream PC databases, such as Microsoft Corp.'s Object Linking and Embedding automation, help tabs buttons and Windows compatibility.

Just developers

However, unlike Microsoft's Access and FoxPro, Borland International, Inc.'s dBase and Paradox and Lotus Development Corp.'s Access—*among all target developers and end users*—Superbase's strategy is to dance with the ones who brought it the corporate application developer.

"In some ways, they've joined the mainstream with some of the features in Superbase 95," said Nicole Roth, an analyst at International Data Corp. in Framingham, Mass. However, the company's intent is not to compete head-to-head with these vendors, Roth said. The major software vendors are incorporating their databases into their applications suite strategies, she said.

Roth said Superbase has been able to maintain a high level of customer loyalty, even after Software Publishing Corp. pulled the plug on the product and sold it to Computer Concepts Corp., which rolled out Superbase operations as a separate group.

"As long as they stick to a solid niche strategy, keep realistic marketing goals and deliver good products, they will do alright in this market," Roth said.

Superbase appears to be heading such advice. Its product feels

Thin slice	
Superbase	Microsoft
Superbase 95	Access
Product revenue	\$12M
Units shipped	72,000
Product revenue	\$124M
Units shipped	LIM

Source: International Data Corp., Framingham, Mass.

Low storage needs

The new version is also faster than previous renditions, uses less RAM and requires less storage—10M bytes—than almost any other

Windows-based database on the market. If needed, Superbase 95 can run on 1M byte of RAM, users said. It needs only 4M bytes to run all the options that come with it. This resource-effective approach appeals to users who do not want to increase their hardware investment.

"We're at a conservative law firm where you don't go upgrading to a database application," said Charles Yuen, an attorney and developer at Pitney, Hardin, Kipp & Staus in Morristown, N.J.

Superbase 95 has integrated tighter communications into this version. Unlike previous renditions, Superbase 95 includes a Vendor-Independent Messaging

Superbase, page 62

CA delivers on initial Visual Objects release

Beta users see need for refinement but mostly applaud it

By Thomas Hoffman

a two and a half years after its acquisition of Nantucket Corp. and a full year beyond its promised delivery of Nantucket's Aspen product, Computer Associates International, Inc. has finally delivered.

CA-Visual Objects, as Aspen is now known, is a graphical, object-oriented development package designed for Xbase developers seeking to rewrite DOS-based applications for Windows-based client/server configurations.

But despite its late arrival—and a few shortcomings that users expect CA to address in future releases—CA-Visual Objects is being hailed as a pretty solid initial release.

"The performance of its object-oriented libraries is exceptional, as is the language itself," said Kevin J. Farley, a senior software engineer at MC1 Communications Corp.'s development laboratories in Richardson, Texas. Another long-term beta tester, Tom Frysinger, manager of information services at a Boulder, Colo., investment services firm, said he is impressed with the product's compiler technologies.

"For a 1.0 product, it's pretty stable," added Larry Dysert, a project estimator at Eastman Kodak Co. in Rochester, N.Y.

Wider audience

Technically speaking, it has the potential to be far more than a niche product" for the 200,000-plus CA-Clipper developers, said Donald A. DePalma, a financial analysis in the software strategies service at Forrester Research, Inc. in Cambridge, Mass.

However, customers who have tested the suite for more than a year said further refinements are needed, including an ability for the product's screen painters to do two-way code generation. This is a function Borland International, Inc.'s dBase for Windows package offers. "It's important for [CA] to keep up with those kinds of things," Dysert said.

Furthermore, CA-Visual Objects offers a data window that enlarges with database records and field specifications. However, under the current release, it is difficult for programmers to customize data on those windows, according to Farley.

Even though users said CA has yet to perfect SQL calls using the package, CA-Visual Objects does contain a Welcom International, Inc. database that provides up to 20 Open Database Connectivity drivers that connect to relational database management systems from Oracle

Corp., Sybase, Inc. and Informix Software, Inc.

"I would definitely develop single-user and nonmission-critical applications with [CA-Visual Objects] today, but I'm looking for future releases before I go into team-oriented, industry-strength development," Farley said.

No price breaks

There is also the matter of pricing. CA-Visual Objects currently costs \$895. Even though it is expected to sell for \$800 to \$800 on the street, many users said they had hoped CA would offer a cheaper upgrade package for its current CA-Clipper customers.

"There have been some complaints that there's no low Clipper upgrade price for Visual Objects," said Lee Dorozio, president of The Zach Catalogue, a Norwood, Mass., CA-Clipper and CA-Visual Objects reseller. "I think there should have been an incentive plan, but then again, I don't run a \$2 billion company," Dorozio said.

"We made a conscious decision to make [CA-Visual Objects] higher in price than the rest of the market, but we think the functionality is there," said Marc Sokol, vice president of product strategy at CA.

Competitive packages, such as Borland's C++ for Windows and single-user versions of Microsoft Corp.'s Visual Basic for Windows, cost \$200 to \$300. Other development environments, such as Powersoft Corp.'s single-user licenses for PowerBuilder for Windows, are priced at roughly \$2,500.

Worth the cost

Besides, sales have been brisk since The Zach Catalogue began offering CA-Visual Objects to early-bird customers the day after Thanksgiving.

"If you're a serious consultant and \$695 [Zach's low-end CA-Visual Objects price] is going to blow away your quarterly margins, then you're in the wrong business," Dorozio said.

Dysert agreed. Beginning early next year, he plans to use CA-Visual Objects to reconfigure an IBM mainframe-based work reporting system that Kodak's 23 estimators use to track construction projects.

The re-engineered application, which Dysert said he expects should take only a few hours to write under CA-Visual Objects, will enable the estimators to move away from clumsy IBM 3270 PC emulation and run native to the company's Xbase database files under a client/server configuration. With those capabilities, "it would be short-sighted to consider pricing a factor," Dysert added.



CA's Marc Sokol: CA-Visual Objects is priced higher than other products on the market, but the functionality is there

Nutcracker makes NT porting from Unix sweet

By Ed Scannell

In its quest to fortify Windows NT's position among its Unix competitors, DataFocus, Inc., has delivered a second tool that reportedly makes it easier to port Unix applications to the Microsoft Corp. operating system.

The Nutcracker X/Software Development Kit was designed to let corporate and third-party developers port X Window System and Motif-based applications to work under the Win32 application programming interface used in NT.

Rather than just emulating Unix on Win32, corporate developers recompile their Unix and X/Motif source code and directly link it to the Dynamic Link Libraries in Nutcracker, according to Pat Higbie, president of DataFocus. This creates an application that runs natively under Win32, Higbie said.

"The goal with Nutcracker is to migrate Unix applications to Win32 quickly in a way that leverages an organization's investment in both its source code and expertise," Higbie said.

An official at one third-party developer, Coda, Inc. in Manchester, N.H., said the new product was effective in getting the company's Unix-based financial accounting

applications to work under Windows NT.

"To beat our competitors to market, we needed a tool that was both quick and reliable to take us to NT. We think [Nutcracker] is the most reliable implementation of Unix on Windows NT," said Ken Henderson, a systems consultant at Coda.

A spokesman for Alsys, Inc., a third-party developer of Unix-based user interface management products, said Nutcracker has proved useful in offering users a broader range of cross-platform development choices.

"By pairing Nutcracker with [Alsys' XUI], [users] have options they never had such as Windows NT now and the option to move to Windows 95 in the future," said Tom Pierpoint, Alsys' director of graphical user interface technologies.

DataFocus is offering the Nutcracker X/Software Development Kit to developers for \$1,995 through Dec. 31.

In the first quarter of next year, DataFocus officials plan to announce the third member of the Nutcracker series, Nutcracker X/0, a low-end version of the Unix-to-Win32 tool aimed at price-conscious information systems departments.

AutoDesk, Inc.'s AutoCAD, which are stored as bit-mapped images in the database. It also uses Superbase to track the changes made in markups and the procedures used to build machines for its customers.

"When you look at specialized databases that support things like fractal compression and imaging, you're talking about a system that can run \$10,000," Buchholz said.

Superbase has also lifted a few ideas from the other mainstream databases for its product. For example, Superbase 95 includes Superbase Language, which operates in a paradigm that would be familiar to a Visual Basic user.

The product also includes a two-way tool feature, similar to the same feature in Borland's DBase for Windows. Two-way tools allow the developer to write in object code or in a procedure language. The script is then presented to the developer in visual form and the procedure language.

Superbase 95 is offered at an introductory price of \$168. Current users will receive a \$20 rebate.

Superbase focused on niche

CONTINUED FROM PAGE 61

and Messaging Application Programming Interface-compliant messaging front end that works with almost all the major electronic-mail packages on the market. This upgrade allows a developer to send a report to another developer within the company without exiting the application.

Added bonus

Native support for multimedia also sets Superbase 95 apart from mainstream databases. The product supports multimedia standards such as Joint Photographic Experts Group and Kodak Photo CD. While only a fraction of the development community requires multimedia features, those users appreciate them.

"Imaging support is a primary need here," said Randy Buchholz, information systems designer at Applied Materials, Inc., a machine design and manufacturing company in Austin, Texas. Buchholz said Applied Materials uses the database to store designs written in

AutoCAD, which are stored as bit-mapped images in the database. It also uses Superbase to track the changes made in markups and the procedures used to build machines for its customers.

"When you look at specialized databases that support things like fractal compression and imaging, you're talking about a system that can run \$10,000," Buchholz said.

Superbase has also lifted a few ideas from the other mainstream databases for its product. For example, Superbase 95 includes Superbase Language, which operates in a paradigm that would be familiar to a Visual Basic user.

The product also includes a two-way tool feature, similar to the same feature in Borland's DBase for Windows. Two-way tools allow the developer to write in object code or in a procedure language. The script is then presented to the developer in visual form and the procedure language.

Superbase 95 is offered at an introductory price of \$168. Current users will receive a \$20 rebate.

Sybase grows gateways

Rollouts include offerings from its latest acquisition

By Kim S. Nash

Sybase, Inc. has big plans for getting there from here.

The company plans to roll out a series of improved gateways between now and mid-1995 for connecting Sybase's SQL Server database to databases from competing companies, Sybase officials said recently.

Part of the lineup is a set of connectivity products that combines existing Sybase technology with gateways inherited when it acquired Micro Decisionware, Inc. (MDI), said Mike Forster, president of Sybase's MDI unit.

"Design work is completed, and developers are engaged," Forster said. He said the first version of the combined technologies, initial release is set for second-quarter 1995, he said. The integrated product will be offered free to the 700 sites that currently use Sybase's or MDI's connectivity units, he added.

ODBC or OLE?

Still uncertain, however, are Sybase's plans for supporting Microsoft Corp.'s Object Linking and Embedding (OLE) specification, which many users and analysts said is becoming more important than Open Database Connectivity (ODBC), Microsoft's initial connectivity standard.

"Microsoft itself is using OLE 2.0 more and more, so the future of ODBC is in question," said Richard Finkenstein, president of Performance

Computing, a Chicago-based consulting firm.

Further, OLE will be part of strategic data bases and tools from other vendors, Finkenstein said. Oracle Corp. has announced an OLE-compatible product, Oracle for Objects, he noted. And OLE is a smoother interface than ODBC to Notes, he said.

But Sybase has not formally announced its intentions regarding the specification, which is the brainchild of its former close development partner. "OLE is a reality in the market," Forster said. "Our architecture is fully capable of supporting objects and messaging."

Other middleware plans for Sybase include the following:

- Read and write support for several mainframe and minicomputer databases early next year, including Datacom from Computer Associates International, Inc. and Rdb from Oracle.
- Two-way replication between SQL Server and IBM's DB2 database, which is due to enter beta testing this month, with general shipments to start in the first quarter of next year.

Also next year, Sybase plans to publish the application programming interfaces for the log transfer manager contained in its replicator product, Forster said. That means third-party software houses could write their own replicators to the log transfer manager in order to create their own replication utilities between Sybase SQL Server and other databases.

JBA International

JBA International, Inc. has announced GuideLine Desktop, an application development tool for OS/2 developers.

According to the Mount Laurel, N.J., company, GuideLine Desktop uses an object-oriented language called JOT, with full point-and-click code prompting.

The product can utilize System Object Model-based objects and provides layout tools for screen designs.

GuideLine Desktop costs \$595.
JBA International
 (609) 231-9400

Lead Technologies, Inc. has announced LeadTools 4.0, an imaging development kit.

According to the Charlotte, N.C., firm, LeadTools 4.0 lets users add image compression to any C or C++ application that provides a CImage interface to DOS or Windows.

The product can convert images from one to 32 bits and supports 42 file formats.

Prices start at \$495.
Lead Technologies
 (704) 322-6322

Product short

SysTools has announced SQL Workbench for Ingres databases, a report writer. The product provides formatting control, design flexibility as well as developer tools. Cost starts at \$1,200. MTI, Long Beach, Calif. (310) 454-4396.

MAKING THE MEXICAN CONNECTION

ONE YEAR AFTER NAFTA

By Roger L. Kay



Whether it's a client, a department manager or his own secretary, when people want to reach Bob Simcoe in the suburbs of Mexico City, they dial his cellular number.

The director general of GATX Logistics de Mexico has learned the hard way to rely on the airwaves rather than the questionable overland communications that snake through the sprawling capital city. Having been burned one time too many by the local infrastructure, he's sticking with U.S. high-technology solutions until something more reliable comes along.

Consensus is that the North American Free Trade Agreement has been a boon for business on both sides of the Rio Grande, and enthusiasts

say Mexico is set to join the First World. A herd of U.S. firms is lumbering into Mexico to graze in this wide open market, and their demand for phone lines is keeping Telefónica de México (Telmex) plenty busy.

Nevertheless, companies considering moving their Latin American operations south of the border might want to think twice. Mexico's troubled telecommunications infrastructure is the reason.

Yes, Telmex does continue to install spanking new fiber in the urban and border areas. But step outside these centers of commercial activity and your new local connection could experience a sudden, devastating outage, the result of rain soaking the antique wires, a breakdown in old switching equipment or construction machinery slicing through buried cables no one knew were there. It's apparent not much has improved since *Computerworld's* last report on Mexico [Dec. 13, 1993].

Curtative connections

Telmex, the formerly state-owned telecommunications provider, will lose its monopoly status completely in 1996. But even though local communications had been privatized in 1990, Telmex still had 50% of the \$4.5 billion telecommunications service market in Mexico in 1993.

While the Mexican phone company's service has often been reviled in the past, there are indicators that competition is having a salutary effect. Telmex will install 824,000 new lines in 1994 alone, says Sara Morino, an analyst at the Communications and Corporate Relations Department of Telmex. The department is also continuing its program to connect remote communities and improve customer service, repairs and installation.

However, even with improvements, the reviews of Telmex's service are still very mixed one year later.

"Telmex has improved dramatically, more than any place I've been in the past two years," says Ronald C. Priest Jr., managing director of risk services at Liberty International, an occupational health and safety financial services firm. The Boston-based company, which is substantially increasing its commitment in Mexico, has just announced Spanish-language versions of its proprietary risk-analysis software.

Simcoe, director general of GATX, a Fort Lauderdale, Fla.-based transport and inventory management company with operations in Mexico City, isn't convinced. Simcoe admits to some improvements at Telmex but says, "Their service

That giant busy signal you hear in U.S. firms attempting to conduct business over Mexico's spotty telecommunications infrastructure.

communications, cellular phones and fiber optics are bringing more of Mexico into the 1990s.



Cargill's Peter Brown: Mexico's telecommunications still has a long way to go

MEXICAN CONNECTION

CONTINUED FROM PAGE 63

vise is lousy. I'm still looking for six new phones. I've been waiting seven months, and nobody cares whether I get them or not."

Peter Brown, vice president of telecommunications at Minneapolis-based Cargill Inc., the huge, privately held U.S. agricultural supplier, gives Telmex service a mixed grade. "Delivery times have gotten better in general, particularly in Mexico City, but there's still a lengthy wait for circuits to outlying areas," he says.

It's that service in remote regions that is the most problematic, forcing firms to find creative ways to bridge the last mile. These solutions include satellite and cellular systems.

One solution to the local loop problem is being provided by a partnership of Bell Atlantic Corp. in Arlington, Va., and Mexico City-based Grupo Inseecel, which was the largest private cellular operator in Mexico until it went public in June. Bell has invested "over \$1 billion" into Inseecel this year, according to Linda Barnabee, an analyst on the Latin America desk at Pyramid Research, a consulting boutique in Cambridge, Mass., that specializes in telecommunications markets in developing regions.

The partnership, which Barnabee says has cellular holdings in Mexico City and four of the nine cellular regions, owns a license to provide nationwide rural service. By setting up cell sites and switches using pared-down equipment and software that requires fixed sites, the partnership will offer reliable, inexpensive local links throughout Mexico, she says.

Other firms venturing into Mexico include most of the major players in U.S. telecommunications. These include service companies such as AT&T Corp., MCI Communications Corp., Sprint Corp. and GTE Corp. They're being challenged by equipment firms such as Motorola, Inc., as massive competitive efforts get under way to line up local financial and operating partners and obtain all-important operating li-

censes from the government, Barnabee says. Without these licenses, no consortium, no matter how powerful, can collect its first dime of Mexican revenue for telecommunications services.

Despite the interest, however, not everyone can afford to wait for improvements.

GATX opened its first warehouse in Mexico City in 1982. For GATX, information systems are key to success. But the company has found that success in the Mexican marketplace has come at the expense of great pain for IS.

GATX helps companies penetrate the Mexican market by taking over their inventory headaches, putting its warehouse space, specialized knowledge and information systems at their disposal. And business has been brisk. The company saw its Mexican warehouse capacity utilization jump from a mere 40% last April

out like Los Angeles, and some of the remote "suburban" areas might as well be in the deep hinterlands, according to Tim Hill, GATX's director of IS.

GATX now relies on a 64K-byte satellite link, installed in September, to connect the Mexico City branch with the home office. Multiplexers break the high-speed stream into 10 low-speed channels, which allow the Mexican operation to bypass entirely the quirky Mexican telephone system and operate as a remote terminal of the U.S. main system.

To meet anticipated demand for at least the next three years, Hill says the firm will rely on increasing the capacity of its Mexican satellite link. After that, if the local infrastructure has become sufficiently reliable, GATX may turn to terrestrial service for some of its needs.

Cargill has decided to take a chance on the

"We in the U.S. expect a number of voice and data services for beyond what most of the world puts up with. We are now transferring these expectations to our Mexican counterparts."

-Peter Brown, vice president of telecommunications at Cargill

Heading The Call

Dramatic increases in U.S. exports of telecommunications and data processing equipment to Mexico demonstrate the interest in improving Mexico's infrastructure and IS resources.

Total Exports to Mexico*

	\$1.16B	\$1.27B	\$1.52B	\$1.59B
Telecommunications equipment				
Automated data processing machines	\$369M	\$502M	\$446M	\$694M

*Source: U.S. Department of Commerce

*Data in U.S. dollars

The Human Connection

As business picks up in Mexico, the need to hire local personnel has become more pressing. But experienced employees don't come cheap. At the high end of the labor market, talent is available but expensive, and that includes IS personnel.

Ronald C. Pruitt Jr., managing director of risk services at Liberty International, says his firm has filled its top general management Mexican spots with local hires, but says bringing aboard bilingual Mexicans with technical skills and advanced degrees can be expensive. Total packages can be "as much or more than an equivalent U.S. hire," he says.

The task of finding employees in IS may become easier, however, as computers find themselves more accepted into general society.

If the crowds that Bob Simeone, director general of GATX, sees jostling the computerstores in Mexican malls are any indication, the local population will soon be closing the computer literacy gap. "Put a PC in their hands, and they go for it," he says. "Once they get a taste for it, they don't let go." — Roger L. Kay

to check-full in September. Since then, the firm has acquired 20% more space and is barely meeting the demands of its U.S. customers.

Boi having initially outfitted its Mexican operation with a carbon copy of its Florida headquarters' AS/400 running proprietary inventory tracking software, GATX is now pulling some IS operations back to the U.S. And its Mexican AS/400 system will soon be history, in part due to the still-shaky Mexican infrastructure, according to Simeone.

Simeone says IS growth is also greatly slowed by Mother Nature. "Right now it's pretty dry," he says, "but from March to October the rains just saturate the lines. Power outages are a very bad problem."

The definition of what constitutes an outlying area is also an issue. For example, although GATX's warehouse is technically in the Distrito Federal (Mexico City), the capital is spread

Mexican infrastructure. The company, which supports its operations in Mexico with IBM AS/400s for the time being, wants each of its foreign units to be self-sufficient from a data processing point of view.

Long road ahead

A year ago, Computerworld found that naive companies seeking a paradise of profits in cheap Mexican labor markets were often surprised to discover that a crumbling infrastructure and high business costs could eat right into their bottom line. While Telmex's old infrastructure is improving slowly, new communications systems are rapidly developing around it, and U.S. companies have gotten more sophisticated about figuring out how to solve their data problems in Mexico. However, these companies remain cautious about putting computer resources in the country.

Brown says he sees the transition offering the Mexican infrastructure up to U.S. standards as a means of transferring expertise.

"In the U.S. expect a caliber of voice and data service far beyond what most of the world puts up with," Brown says. "We are now transferring these expectations to our Mexican counterparts."

Ground conditions "have come a long way," he adds, "but there's still a long way to go." ■

Kay is a free-lance writer in Wayland, Mass.

DEADLINE
APPROACHING
JANUARY 23, 1995

mother ALWAYS KNEW YOU WERE A GENIUS



PROVE HER RIGHT. Call 1-800-829-4143 now for your free Windows World Open Entry Kit.

Blow the judges away with your Microsoft Windows™ custom application. Display your ingenuity for creating an application that's streamlining the way your corporation or organization does business. Get showered with recognition from your peers. Participate in an awards ceremony featuring Bill Gates and other industry luminaries. Then call home and tell mom thanks for keeping the faith. Find out more by calling for your free Entry Kit today.

But hurry, the entry deadline is January 23, 1995.



COMPUTERWORLD

Microsoft



COGNOS

WALL

FORTUNE

healthcare

BusinessWeek

* Windows World Open Entry Kit contains all details and rules for the contest. Contest is void where prohibited by law. No purchase necessary. Compuware, Inc. is an IBM Company. Windows, Windows World and the Windows logo are trademarks of Microsoft Corporation. Windows World and the Windows logo are used by INTERFACE GROUP, ALEXANDRA, Inc. under license from Microsoft. All other trademarks are the property of their respective owners.

The new network manager: Turning challenges into opportunities

Lawrence W. Bolick

As data centers downsize, client/server heats up and members of the Nintendo generation join corporate IS staffs, network managers face a torrent of new challenges.

How you react to these new challenges today will greatly define your role tomorrow. Shirk from the challenge and you will likely find yourself responsible for the network's pipes, but little else — a member of the old breed. Embrace the challenge, however, and you may well have the opportunity to play a key role in defining the enterprise infrastructure of the future.

The following five key steps will help network managers turn their challenges into opportunities:

1. Know the business and where it's heading. It's a familiar refrain but indispensable nonetheless. This step will help you identify possible solutions to business problems. Without it, little substantive communication with business planners is possible, leaving you a member of the old breed of IT professionals.
2. Get ahead of the curve. Position yourself to anticipate issues and suggest solutions. For example, if your company plans to expand into China, you might proactively seek out value-added resellers or integrators interested in establishing or expanding their own presence there. When the call comes to provide network support for the new sites in otherwise unrealistic time frames, you will have already done much of the spade work.

3. Create management frameworks. Knowing the business trends and key solutions enables you to develop frameworks to manage the enterprise architecture. This entails identifying alternatives, their strengths and weaknesses, and the best scenario for each.

For example, site management overviews could be kept internal to the business — which facilitates remote management but creates a variety of headaches of its own, including staffing and quality assurance. Try finding that LAN manager in Beijing, for example.

4. Monitor your progress. The link between business needs and technical solutions can be dynamic — changing as business conditions change. Factors such as mergers and acquisitions, interest rate shifts and political instabilities can change business direction and the associated technical solutions. You must be able to react appropriately.

5. Publicize your endeavors internally. Don't be shy. The link between business

drivers and technological solutions will become ever more important as business becomes increasingly dependent on the timely availability of accurate information.

Thus, the network manager who has developed early insights into appropriate technological solutions will be an invaluable business resource.

Network managers are at a cross-

roads. Shrink from the enterprise-wide challenges ahead and you'll likely become the keeper of the pipes. Rise to the challenge and you'll become a true business partner as the enterprise of the future becomes increasingly dependent on information flowing among distributed resources. The choice is clear.

Bolick is vice president of network services at Cambridge Technology Partners in Cambridge, Mass.

EVERY RE BEGINS DEMONS

TRY AN SMP NEC RISC SERVER

NEC Express RISCserver

Symmetrical multiprocessing

Up to two 150 MHz RISC processors

Up to four Vx400™ MIPS RISC processor

RAID with HOT Swap capability

256MB Standard RAM,

expandable to 512 MB ECC

Powered by dual RISC processors and optimized for Windows NT™ 3.5, the NEC Express

RISCserver™ provides unparalleled transaction performance in the SQL server environment.

CALL 1-800

Offer expires December 31, 1994. RISCserver and See How Fast the Difference are trademarks of NEC. All other trademarks and registered trademarks are the

Management

Calendar

JAN. 15-21

First Annual Mobile Communications '95 Conference, Dallas, Jan. 16-18 — The conference will address North American, European and Pacific Rim regions, marketing strategies used in these regions and regulatory and legislative matters aimed at mobile equipment ven-

dors and service providers. Contact: Frost & Sullivan, Inc., Santa Clara, Calif. (408) 256-1076.

1995 Usenix Technical on Advanced Computing Systems, New Orleans, Jan. 16-20 — Contact: Usenix Association, Berkeley, Calif. (510) 528-8649.

Softage '95, San Jose, Calif., Jan. 17-19 — The conference will focus on business and technical issues facing software firms. Sessions include product development, marketing and sales; technical support, customer service; translation, or "localization"; finance, packaging and manufacturing. Contact: Nanci Cramer, Exportmasters, Englewood, Calif. (303) 771-2000.

Mobile Outlook on Communications and Computing, Atlanta, Jan. 19-20 — The three-day conference will focus on how to integrate mobile sys-

tems into a fixed computing environment, how much of what is now in place must change to permit remote access, how and when to make required hardware and software modifications and why some promising pilot programs succeed while others fail. Contact: David A. Kammerer, Kotch & Polak, Inc., New York, N.Y. (212) 605-6196.

JAN. 22-28

ComNet '95 Conference & Expo, Washington, Jan. 23-26 — Products and technologies to be exhibited will include the following: internetworking hubs, bridges, routers, gateways, modems, network applications, databases, private branch exchange-to-computer applications, multimedia videoconferencing, LANs, servers, adapters, wiring, backup and network services, local and long-distance services, mobile computing, portable and handheld computers, client software, wireless data services, network management and security. Contact: TDDO World Expo, Faneuil Hall, Mass. (508) 529-0700.

JAN. 29-FEB. 4

Special Libraries Association 1995 Winter Education Conference, Raleigh, N.C., Jan. 29-31 — Theme: Managing Information Technology. Contact: Special Libraries Association, Washington, D.C. (202) 224-4700.

The 1995 Financial EDI Conference, San Jose, Calif., Jan. 29-Feb. 1 — Seminars include "How to Define, Organize and Manage the EDI Committee," "Managing Electronic Commerce Integration," "Applying Project Management to Financial EDI Implementation" and "Hop on the Highway: Strategic Considerations on the Internet." Price: \$850. \$750 for early registration. Contact: Financial EDI Conference Registry, National Automated Clearing House Association, Baltimore, Md. (703) 742-8196.

Second Annual Display Manufacturing Technology Conference, Santa Clara, Calif., Jan. 31-Feb. 2 — Contact: Mark Goldfarb, Palisades Institute for Research Services, Arlington, Va. (800) 757-7477.

Chargeback for Centralized and Distributed Processing, Las Vegas, Feb. 1-3 — Contact: Financial Management for Data Processing, San Francisco, Calif. (415) 731-3706.

FEB. 5-12

Demo '95, Palm Springs, Calif., Feb. 5-6 — The conference will include product demonstrations, product premieres and hand-to-hand product show downs. Contact: InfoWorld Editorial Events, San Mateo, Calif. (650) 653-4312.

Fourth Annual AS/400 Operations Automation User Conference, Phoenix, Feb. 6-9 — Contact: HelpSystems, Inc., Minneapolis, Minn. (612) 953-0000.

Process for Building an Effective Process Management and Standards Program, Orlando, Fla., Feb. 6-8 — Contact: Quality Assurance Institute, Orlando, Fla. (407) 363-1111.

Decorum '95 Conference, La Jolla, Calif., Feb. 7-9 — The conference will feature several speakers and sessions on client/server mission-critical deployments in the enterprise. Elaine Wolf, Transcar Corp., Pittsburgh, Pa. (412) 325-4400.

VOLUTION WITH A TRATION.

RVER FOR 60 DAYS FREE.

Witness this demonstration of power and performance through our 60-day free trial. No strings attached. Call now to arrange for delivery. Like every revolution, it will change your world.

SEE, HEAR
AND FEEL THE
DIFFERENCE.TM

NEC

- 709 - 3434

Technology, Inc. VgaBoard is a trademark of NEC Electronics, Inc. Windows NT is a trademark of Microsoft Corp. property of their respective owners. ©1994 NEC Technologies, Inc.

Your *relational* data is ready to be *harvested*.

Consider this your Farmer's Almanac.

You've invested huge sums of money building your relational databases.

Now it's time to let your users analyze that data in a way that helps them make better business decisions. For that you'll need On-Line Analytical Processing, and no one has a stronger position in OLAP than IRI Software. In fact, 300 of the Fortune 500 are using our



For a free copy, phone 800-705-7227.
In Canada, phone 800-403-0474.

EXPRESS® family of OLAP applications for sales, marketing, finance and EIS. To learn more about OLAP technology and to find out what E.F. Codd, The Gartner Group, The Aberdeen Group and other industry consultants are saying about this emerging category, phone today for our free white paper.



IRI Software

800-705-7227

The CW Guide to Business Intelligence Software



New end-user, development and database tools offer more options than ever before to provide organizations with instant data analysis. But IS must take care to implement the right mix of tools rather than rely on a single silver bullet.

Data access FAST!

Faster, bigger, better, higher, more, NOW!
Those may be words that make a grown information systems professional cry, but that's what users want in the advent of client/server and distributed computing. They want faster access to company data to perform the analysis necessary to make quick business decisions.

Today, everyone from spreadsheet vendors to makers of fancy executive information systems (EIS) are promising that their latest software finally answers this demand.

But the truth is that while the software has come a lot closer to making it easier for IS to meet user data demands, there is no complete solution. Many vendor approaches come with limitations or require users and IS to learn new database structures and programming environments. Despite vendor claims to the contrary, IS must select the best mix of software to suit the unique requirements of its company.

This guide presents examples of what companies have done to solve this problem. It sorts out vendor offerings, including what on-line analytical processing (OLAP) tools have to offer; looks at what's up with mainstay decision-support and EIS vendors and shows what alternative end-user and programming tools can do for you.

— Guide continues on page 72



Report Information
Management's 200-page
guide to the latest advances
in OLAP and other data
mining software.
From Oracle, Comshare,
Information Builders, Matl
Software and More.
Page 72.



Using Linux Take a look at
Tricor, an executive
information system based
on Linux's distinctive
business software.
Page 72.

Leading business intelligence
software products for end
users and developers can be
found in a roundup starting
on page 82.

Spend
less.



Worry
less.

**INTRODUCING THE NEW
64-BIT ALPHASERVER FAMILY.**

Now if you want screaming 64-bit RISC performance and unequalled scalability, you'd be smart to spend less. And buy one of our amazing new AlphaServer™ systems. You'll also worry less, with their fortress-

like reliability features and the best server warranty in the industry.

But you won't settle for less. The AlphaServer family offers you over 6,000 UNIX™, Windows NT™, and OpenVMS™ applications. They also support industry-standard PCI hardware options and handle more

I/O throughput,
more internal
storage, and more
memory. In fact, the only thing
they don't give you more of is
cost.

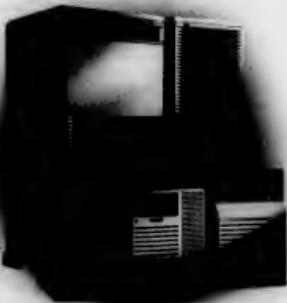
You'll have to go elsewhere
for that.

Call your Digital Business
Partner or 1-800-DIGITAL.

digital

AlphaServer 1000 4/300	AlphaServer 2000 4/300	AlphaServer 2100 4/300	AlphaServer 2000 4/375
Processors (300P)	1	1-2	1-4
IOPS	Up to 285	Up to 400	Up to 660
SPC-2	135.8	131.8	131.8
Max SPC-2, rev 12	3.136	6.178	11.892
I/O ports	2 PCI, 7 EISA, 1 both	3 PCI, 7 EISA	3 PCI, 8 EISA
Max I/O Bandwidth	132MB/s	132MB/s	132MB/s
Max Memory	512MB	640MB	2GB
Max Int. storage	-14GB	16GB	32GB

Just don't
settle
for less.



Is OLAP the answer? Maybe not, but it solves many old database problems

By Alan Radding

After sitting in the background for years, on-line transaction processing (OLTP) has slipped into overdrive. It is an emerging business intelligence technology that allows end users to access and analyze very large amounts of data.

E. F. Codd of relational database fame blessed OLAP with a set of 12 rules (see box at right) much the same way he jump-started the relational database management system market a decade earlier with his 12 relational rules. In a study conducted earlier this fall, International Data Corp. analyst Clark Gillan, referring to OLAP, declared: "Business modeling vendors are on the cusp of market redefinition."

OLAP also promises fast user access to data that can be presented in very sophisticated ways without custom programming.

"It lets me give our analysts and engineers access to a very large volume of information in a format that allows them to find their own answers as questions occur. They don't have to call me for a report," says Ellery Foley, software group leader at Martin Marietta Aero and Naval Systems in Baltimore.

Before the company implemented Dimensional Insight, Inc.'s Cross Target OLAP tool, Foley gave users the data in ASCII file form or as a static report — neither of which was very useful to end users.

Multidimensionality is the core of OLAP.



The business problems our users deal with are inherently multidimensional. They are looking at different slices of data, trending by time and by types of transactions," says Mark Max, director of financial systems at Baltimore-based Blue Cross/Blue Shield of Maryland.

In search of integrity

A multidimensional OLAP tool precalculates and aggregates values, usually in extensively indexed arrays, so end users can quickly slice and dice the data using a variety of keys.

For example, a Blue Cross/Blue Shield manager might want to look at contract enrollment by product and by market over a period of time, a question with four dimensions.

"People would throw numbers into spreadsheets and work it until they thought they had it right, but there was no inherent integrity to the results," Max explains.

With Information Resources, Inc.'s Express, a multidimensional database, users can perform such analyses quickly and simply with all the required calculations and aggregations already executed and validated.

In the past, multidimensional databases had cornered the market for this kind of complex analysis, but today, users are

The 12 steps of OLAP

Database guru E. F. Codd's 12 rules of on-line analytical processing (OLAP) are one paradigm by which to measure how well products match the functional model.

1. INTEGRATION: Integrating and allowing a user view of the data that can include rights and time, etc.

2. INTEGRITY: Where the analytical capability that allows multidimensional analysis is located should be irrelevant to the user.

3. INDEPENDENCE: The tool must map its own logical schema to heterogeneous physical data stores.

4. INDEPENDENT PERFORMANCE: Performance should not be affected by increases in the number of dimensions the user selects.

5. INDEPENDENT COMPUTATION: Server components of OLAP should be sufficiently intelligent to be implemented with a minimum of effort.

6. COMMON DIMENSION: Only one logical structure should exist for all dimensions.

7. COMMON STATE MANAGEMENT: Empty or full spaces in a matrix (which makes it a sparse matrix) should be handled efficiently.

8. INTEGRATED SUPPORT: Consistent storage, security and integrity for multiple users.

9. INTEGRATED STATE MANAGEMENT: Calculations and other activities between dimensions should not require user intervention.

10. INTEGRATED STATE MANAGEMENT: Drilling down, zooming out, reformatting and consolidating of the data presentation and analysis.

11. PARSABLE REPORTS: Allows users to manipulate the data in whatever form is most useful.

12. INTEGRATED STATE MANAGEMENT: Servers tools should be able to accommodate from 15 and preferably 20 data dimensions.

Reprinted from Computerworld's In Depth section on July 24, 1994.

WHAT IS ON-LINE ANALYTICAL PROCESSING?

Business intelligence software makers have developed on-line analytical processing (OLAP) to address the shortcomings of on-line transaction processing (OLTP), such as bottleneck in managing multidimensional relationships, limited batch analytical ability and difficult data consolidation. OLAP uses a multidimensional database that reads and aggregates large groups of diverse data to analyze relationships and look for patterns, trends and exceptions.

BACK END: DATABASES/DATA WAREHOUSES



- DBMS
- Flat-file databases
- Hierarchical databases

MIDDLE: OLAP SERVER



Data is retrieved from back-end databases and staged in an OLAP multidimensional database for retrieval by front-end systems

FRONT END: END USER



- Spreadsheets
- Statistical packages
- Graphical interfaces
- Executive information systems/decision-support systems

SOURCE: BUSINESS INTELLIGENCE, PERFORMANCE COMPUTING, INC., GREENSBORO

Fill it out. Fax it in.

51 issues for only \$48. Now Only \$39.95

FAX NO. 614-382-1058

Yes, I want to receive my own copy of COMPUTERWORLD each week. I accept your offer of \$39.95 per year - a savings of \$8.00 off the basic subscription price. Plus, I'll also receive the new '94-'95 COMPUTERWORLD Salary Survey FREE just for trying COMPUTERWORLD.

P/CODE 95

First Name	M	Last Name
Title	Company:	
Address	City	State Zip

Address shown: Home Business New Renew Basic Rate: \$48 per year
 * U.S. Only Canada \$95, Mexico, Central/South America \$150, Europe \$295, all other countries \$295 Foreign orders must be prepaid in U.S. dollars.



Not off the
press!
1994-1995
edition

Please complete the questions below to qualify for this special rate.

1. BUSINESS/INDUSTRY (Circle one)

- Manufacturing (other than computer)
- Financial/Insurance/Real Estate
- Wholesaler/Retail/Trade
- Business Services/Temp./Sp.
- Government/State/Federal/Local
- Communications/Systems/Public Utilities
- Manufacturing/Computer/Hardware
- Mining/Construction/Petroleum/Refining/Agric.
- Manufacture of Computers, Computer-Related Systems or Peripherals
- Systems Integration, VAR, Computer Services
- Computer Software/Computer Services
- Computer-Peripherals Distrib./Retailer
- Other

Please check

2. TELE/FAX/PC (Circle one)

- TELEPHONE MANAGEMENT
- 15 Chief Information Officer/Vice President/Asst. VP
- 21 Dir. Mktg. MIS Services, Information Center
- 22 Dir. Mktg. PC Sales, Data/Term. Comm.
- 23 Dir. Mktg. Netwks. Sys., Data/Term. Comm.
- 24 Dir. Mktg. PC Sales, Development, Sys. Architecture
- 25 Dir. Mktg. PC Sales, Development, Sys. Architecture
- 41 Engineering, Scientific, R&D, Tech. Management
- 42 Engineering, Scientific, R&D, Tech. Management
- 43 Engineering, Scientific, R&D, Tech. Management
- 44 Engineering, Scientific, R&D, Tech. Management
- CORPORATE MANAGEMENT
- 11 President, Owner/Partner/General Manager
- 12 Vice President, V.P.
- 13 Treasurer, Controller, Financial Officer

3. Do you use/evaluate/specify/recommend/purchase

- Computer Systems
- (a) Mac OS
- (b) Windows NT
- (c) OS/2
- (d) Windows
- (e) Unix
- (f) Novell
- (g) App. Development Products
- (h) Networking Products

E4451-5

COMPUTERWORLD

Fill it out. Fax it in.

51 issues for only \$48. Now Only \$39.95

FAX NO. 614-382-1058

Yes, I want to receive my own copy of COMPUTERWORLD each week. I accept your offer of \$39.95 per year - a savings of \$8.00 off the basic subscription price. Plus, I'll also receive the new '94-'95 COMPUTERWORLD Salary Survey FREE just for trying COMPUTERWORLD.

P/CODE 95

First Name	M	Last Name
Title	Company:	
Address	City	State Zip

Address shown: Home Business New Renew Basic Rate: \$48 per year
 * U.S. Only Canada \$95, Mexico, Central/South America \$150, Europe \$295, all other countries \$295 Foreign orders must be prepaid in U.S. dollars.



Not off the
press!
1994-1995
edition

Please complete the questions below to qualify for this special rate.

1. BUSINESS/INDUSTRY (Circle one)

- Manufacturing (other than computer)
- Financial/Insurance/Real Estate
- Wholesaler/Retail/Trade
- Business Services/Temp./Sp.
- Government/State/Federal/Local
- Communications/Systems/Public Utilities
- Manufacturing/Computer/Hardware
- Mining/Construction/Petroleum/Refining/Agric.
- Manufacture of Computers, Computer-Related Systems or Peripherals
- Systems Integration, VAR, Computer Services
- Computer Software/Computer Services
- Computer-Peripherals Distrib./Retailer
- Other

Please check

2. TELEPHONE/COMPUTER MANAGEMENT

- 15 Chief Information Officer/Vice President/Asst. VP
- 21 Dir. Mktg. MIS Services, Information Center
- 22 Dir. Mktg. Netwks. Sys., Data/Term. Comm.
- 23 Dir. Mktg. PC Sales, Data/Term. Comm.
- 24 Dir. Mktg. PC Sales, Development, Sys. Architecture
- 25 Dir. Mktg. PC Sales, Development, Sys. Architecture
- 41 Engineering, Scientific, R&D, Tech. Management
- 42 Engineering, Scientific, R&D, Tech. Management
- 43 Engineering, Scientific, R&D, Tech. Management
- 44 Engineering, Scientific, R&D, Tech. Management
- CORPORATE MANAGEMENT
- 11 President, Owner/Partner/General Manager
- 12 Vice President, V.P.
- 13 Treasurer, Controller, Financial Officer

3. Do you use/evaluate/specify/recommend/purchase

- Computer Systems
- (a) Mac OS
- (b) Windows NT
- (c) OS/2
- (d) Windows
- (e) Unix
- (f) Novell
- (g) App. Development Products
- (h) Networking Products

E4451-5

COMPUTERWORLD



NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

BUSINESS REPLY MAIL

FIRST CLASS MAIL PERMIT NO. 55 MARION, OH 43306

POSTAGE WILL BE PAID BY ADDRESSEE

COMPUTERWORLD

P O BOX 2044
MARION OHIO 43306-2144



NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

BUSINESS REPLY MAIL

FIRST CLASS MAIL PERMIT NO. 55 MARION, OH 43306

POSTAGE WILL BE PAID BY ADDRESSEE

COMPUTERWORLD

P O BOX 2044
MARION OHIO 43306-2144



turning to a broader range of tools to tackle what are inherently multidimensional problems.

The major multidimensional database products include Arbor Software, Inc.'s Ebase, Comshare, Inc.'s Commander, Dimensional Insight's Cross Target, Keenan Systems Corp.'s Accumulate, Information Resources' Express and Pilot Software, Inc.'s LightShip Server. Each of these products has both strengths and weaknesses.

"We liked the built-in analytical capabilities of Express," Max says, but the

share can't store text. It only stores numeric data, but we sometimes want to attach text to the stuff," he says. Comshare has promised him a solution.

Examining alternatives

While OLAP approaches provide the complexity many organizations need, some users are turning to alternative products because they are considered easier and faster to implement.

For example, T. Rowe Price Associates in Baltimore chose Business Objects Inc.'s Business Objects largely because of its ease of use, which gives managers the ability to perform complex multidimensional analysis. This allows them to follow lines of questioning on their own.

"One question leads to another," says Tim Hedner, vice president of retail systems. "It would be too slow and costly to rely on ES to create and run special reports for every question that pops into a product manager's head, according to Hedner.

"We looked at some PC-based multidimensional databases, but they couldn't do what we needed," recalls Michael Lantos, a design engineer at Harvard Community Health Plan in Brookline, Mass.

The company wanted high-level multidimensional views of the data combined with the ability to drill down to detailed data. It settled on a set of SAS Institute Inc.'s products that digest volumes of data and present them in a variety of ways.

"It is not multidimensional, but it lets us start at a high level, get to a hypothesis and then look at detail, such as individual patients, events by event," Santosa explains.

Can't use just one
Managers can't live by the OLAP alone — whether it's a multidimensional database or alternative product — say more than they can manage with just relational database capabilities. Their information needs are too complex and varied. No single product serves the full range of end-user needs.

- Multidimensional databases aren't the only answer. This screen displays of SAS Institute's SAS/EIS demonstrates that fourth-generation language-based packages can be designed to provide multidimensional views and analysis. Standard Community Health Plans use SAS to disrupt

large amounts of data and provide analysis of individual patients.

Dan Newsom, manager of distributed applications at Allied Signal, Inc. in Tempe, Ariz., is happy with the Comshare QLAP product with one exception. "Com-

Product manager at the company

start at a high level, but when they spot something specific, such as a drop in market share in a certain area, they want to drill down fast to very low levels of detail. The company uses both Express and LightShip, but "these systems only give me the top-line view, not the detail," Marks says.

To deliver the whole picture, IS managers will have to assemble the right mix of data tools: RDBMS, OLAP, desktop query, report writers and more, depending on the nature and sources of the data and the user's needs.

Budding is a free-lance writer in Newton, Mass.

BUYING DECISION INGREDIENTS

A large grocery distributor in the Pacific Northwest wanted to make production data residing on the AS/400 available to a wide range of users who need to slice and dice, sift, aggregate and view the data in myriad ways. Traditional query and access tools, such as Information Builders, Inc.'s Focus400, were too difficult for end users.

"The users still had to know about the data structure and names," says Bob Haansen, a database administrator at a wholesale food products distributor. Haansen took on the task of finding a data-access tool and turned to OLAP products, conducting a thorough evaluation of all the options. These included spreadsheets such as Informix Corp.'s Wingz, Microsoft Corp.'s Excel and Lotus Development Corp.'s Improver; relational query products such as Tribase Corp.'s Forest & Trees and Interplay, Inc.'s QME; and a variety of multidimensional tools, including those with extensive programmable languages, such as

source 'Express and Keanan Systems' Accumate and nonprogrammable products such as Cognos, Inc.'s PowerPlay.

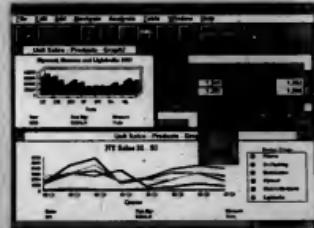
Hansen says he rejected products such as PowerPlay, Dimensional Insight's Cross-Target and strictly front-end tools because he felt a corporate-wide data-access system needed a more programmable interface and easier

Hansen narrowed the field to three: Express, Accumate and Pilot Software's LightShip. Then he got to the nitty-gritty. His evaluation found the following:

- LightShip is limited to 32,000 elements along a single dimension (with permission to double that figure).
- Express handles six dimensions with ease, but more than that requires joint dimension, which entails extra work.
- Accumate has a limit on the number of dimensions

- Accumate has no limit on the number of dimensions.
- Both Accumate and Express handle sparse data well, although Accumate handles it more easily.
- Accumate and LightShip both easily handle the company's unusual time periods (Friday through Thursday sales week and a physical year pegged to the last Saturday in July).

Clearly, much of the evaluation was subjective. "They were all good, but Hansen turned out to have the best mix of features and ease of use for us," Hansen concluded. The company bought Accumatic. —*Alan Radding*



Secure Systems' Accessafe uses open user's partitions because of its wide features, which include unlimited dimensions, handling of specific and generic keys.



MERGING TECHNOLOGIES

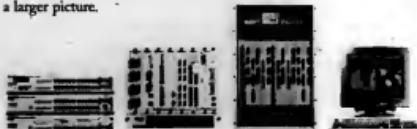
Hub and router technologies are merging. Network management is no longer an option. ATM and packet switching will soon make virtual networking a reality. Let's face it, the networking industry is changing. And while those in the industry with incomplete solutions scramble to acquire the pieces they're missing, one company is already putting the puzzle together. That company is Cabletron Systems.

Our singular vision has enabled us to develop the products and services your company requires today, and will desire tomorrow. Products that are not made obsolete with the introduction of newer ones. Products that fit the plan, grow as you grow, and become part of a larger picture.

A big part of that picture is your right to choose the internetworking vendor that's right for you. That's why we're fanatical about open systems and industry standards. And to be sure that our vision matches yours, we work directly with you when developing new products, with the largest direct sales and support organization in the industry.

Why wait for the vendors who are still trying to figure out their own companies' direction. Check out Cabletron Systems: the networking vendor dedicated to your company's direction.

Call (603) 337-2705. And ask for your free, informational MMAC-Plus CD ROM presentation.



CABLETRON SYSTEMS ONE COMPANY.
The Complete Networking Solution™. ONE VISION.

EMERGING TECHNOLOGIES



BUYERS' SATISFACTION SCORECARD:

Varied tools compete for top spot

By Kevin Burden

While on-line analytical processing (OLAP) tools promise fast data analysis, they are far from the only game in town.

This Buyers' Satisfaction Scorecard spotlights a variety of tools, including non-OLAP products, such as Trizice Corp.'s Forest & Trees and Information Builders, Inc.'s (IBI) Focus Reporter, which are not aimed at OLAP but have had their successes with large database access. The Scorecard also looks at Cognos, Inc.'s PowerPlay, which puts multi-dimensional analysis on the desktop, and executive information system (EIS) stalwarts Pilot Software, Inc.'s LightShip and Comshare, Inc.'s Commander EIS, which are repositioning on client/server OLAP approaches.

As the ratings demonstrate, each product has its strengths and weaknesses, which the summaries below profile in detail. The survey was conducted and tabulated by the Computerworld Database Division in Framingham, Mass. Data from a minimum of 150 users was collected for each product.

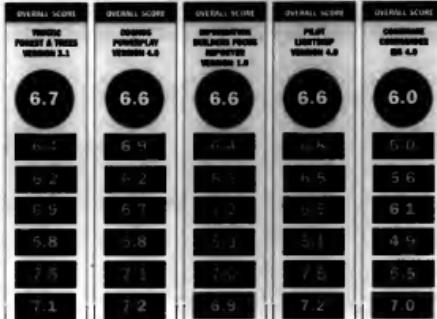
LEADING BUSINESS-ANALYSIS USER AND DEVELOPER TOOLS

Ratings are based on a 1-to-10 scale where 10 is best. Total scores are the average of all ratings collected by Computerworld's Database Division. Products' names and descriptions are listed in order of importance to all users. Figures here have rounded.

Responses base: 150 users per product.

CATEGORIES

DATA WAREHOUSE User Interface, Analysis	EXECUTIVE INFORMATION and OLAP tools	INTEGRATED SUPPORT, Service, Administration	WEB Policy, and security	WEB Reporting, Data mining
Forest & Trees Version 3.1	PowerPlay Version 4.0	Focus Reporter Version 1.0	LightShip Version 4.0	Commander EIS 4.0
Information Builders, Inc.	Pilot Software, Inc.	Trizice Corp.	Comshare, Inc.	
Windows, Macintosh, OS/2	Windows, Macintosh, OS/2	Windows, Macintosh, OS/2	Windows, Macintosh, OS/2	Windows, Macintosh, OS/2
Client/server plus OLAP	Client/server plus OLAP	Client/server plus OLAP	Client/server plus OLAP	Client/server plus OLAP



Forest & Trees 3.1

Quick real-time database drill down

Forest & Trees is a drill down and navigation tool that uses SQL statements to query relational and flat-file data repositories. Multidimensional databases are not yet an option.

One of the product's weaknesses, reflected in its low rating for development, is that its functionality has not kept up with that of competitors. While other products can automatically recognize distinct file formats, Forest & Trees requires programming to do so.

"We are trying to get away from having to use programmers experienced in code writing in certain areas, but as long as we maintain our Unix and NetWare environments we will need programmers capable of making Forest & Trees recognize the different formats," says Mark Raynard, director of information technology at CEM Corp. in Charlotte, N.C.

On the other hand, Forest & Trees' Query Assistant helped it garner one of the highest data access ratings in the Scorecard. Queries are developed through a point-and-click procedure and can be modified by a dialog or by editing the SQL.

PowerPlay 4.0

Desktop multidimensional analysis

The latest release of PowerPlay integrates several previously separate modules to further enhance the product's ease of use and performance. The modules include the following:

- Transformer, an administrative package designed to retrieve and arrange relational data, spreadsheets or flat files into a multidimensional format.
- Portfolio, a package that organizes and distributes collections of reports into executive briefing books using Microsoft's Object Linking and Embedding (OLE).

"PowerPlay 4.0 now also includes exception highlighting, an important capability that had been left out of past releases," says Sandy Sampson, managing analyst at Dataprise Information Services Group in Iselin, N.J.

Users rated PowerPlay highly for its data access capabilities, which were strengthened by a new release (3.0) of Impromptu, Trizice's database reporting tool. Improvements include complete Windows integration with OLE 2.0 support and new enterprise deployment and control features.

Focus Reporter for Windows 1.0

Windows desktop access for strong EIS

Focus Reporter for Windows is IBM's attempt to take its well-known fourth-generation language aboard the business intelligence software wave.

Transformer is an end-user tool for IBM's business intelligence product line. Other elements of the offering include the Business Intelligence Suite, which includes WinView for visual statistical analysis, and data import and export utilities.

For more sophisticated decision support and EIS application development, IBM offers Focus Professional for Windows, Ad Hoc Option and Focus/EIS, which is Pilot Software's LightShip product marketed under the Focus name.

Technical support

The leading strengths of IBM's approach are technical support, which received the highest satisfaction rating, and the Focus programming language.

U.S. Ray Tappier, acting manager for marketing information at Amstar, says he is looking for improvement in the tool's graphics area. "There are a couple of glitches in the graphics, but overall it was a quantum leap for Focus," he says.

LightShip 4.0

OLAP/EIS proprietary development

Pilot Software's LightShip 4.0 is the latest layer of a multi-layered approach to an OLAP development environment.

The LightShip Suite includes:

- LightShip Professional 4.0, a graphical user interface that offers extensive three-dimensional graphics, enhanced navigation, improved programming and new table objects.
- LightShip server, a multidimensional data server aimed at quickly delivering time series data reporting and analysis.
- LightShip Modeler, a development tool for modeling and budgeting applications.
- LightShip Lens, a multidimensional access tool.
- LightShip Link, which connects tools to SQL databases.

Fast access

As the Scorecard indicates, LightShip's strengths are data access and performance, which can be attributed to the optimization of the server for RDBMS.

LightShip received its lowest rating for price. "LightShip has a lot of capability and is therefore expensive and difficult to install," says Richard Finstein, president of Performance Computing, Inc. in Chicago.

Commander EIS 4.0

Client/server plus OLAP

Long the dominant EIS mainstream vendor, Comshare is quickly developing its product line across a client/server environment and teaming with Arbor to provide robust OLAP capability.

"Commander has been multidimensional since Day 1 with System W, its multidimensional data model. Now it is also working with Ebase to provide an alternative," says Howard Dremer at Gartner Corp. Inc.

The product's strengths have migrated to the new environment, as have its weaknesses. While Commander provides strong manageability and availability for data and applications, it is hard to use because of a cumbersome scripting language, Dremer says.

The Scorecard ratings reflect this weakness in low ease-of-use and development ratings.

The product took its worst hit on price. "Price is historically high for EIS products," Dremer says. "One problem you have is the misapplication of technology. Some users pay too much for tools that offer more functionality than they need. Others buy desktop tools that can't give them what they want," he adds.



FIRING LINE: Track measures up as multivendor data-access tool

By Kevin Burden

Like many companies, the organizations in this Firing Line cannot afford to replace their central databases, yet they need a more efficient way to deliver data to end users for analysis.

Their solution was Track, business intelligence software from Intelligent Office Co. in Orlando, Fla. Track is based on IBM's Executive Decisions executive information systems software, which IBM markets in England but Intelligent Office has licensed to market in the U.S.

Track, which complies with most industry data interchange standards, allows companies to maintain their data repositories by essentially building front-end data-access applications for a variety of relational and multidimensional databases or spreadsheets.

"We plan to stick with the products we pick for the long term. That includes Microsoft Corp.'s FoxPro and our IBM AS/400 database," said Mark Vogtner, software manager at the U.S. Olympic Committee in Colorado Springs. "We did not want to throw away our expertise by choosing a product that required us to learn another database."

The latest version of the product, Track for Windows 1.2, has evolved from a fourth-generation language into an object-oriented development environment that follows a three-tiered client/server architecture. The first layer is a data warehouse,

which can be any combination of relational or on-line analytical processing databases. The second layer is the object server, which contains the blueprints for the objects that are common enterprise-wide. The third layer is the client where the Track application and local objects reside.

The four evaluators were a trucking company, a health systems provider, a retail chain and a nonprofit organization. The format for this evaluation was prepared with help from Howard Rubin Associates and Technology Investment Strategies Corp.

Technical support

Intelligent Office provided several weeks of on-site support during the first phase of development. Then, through Notes

AS/400: Changes in the world of the AS/400 can be tracked via the Internet, notes the developer.

Health: Changes in the world of the medical industry can be tracked via the Internet, notes the developer.

Retail: Changes in the world of the retail industry can be tracked via the Internet, notes the developer.

Nonprofit: Changes in the world of the nonprofit industry can be tracked via the Internet, notes the developer.



servers, users are able to communicate and send their application to Intelligent Office consultants for fixes.

Retail chain: Since "the consultant left, we have just passed files back and forth through Lotus Notes."

Development language

All the tools that make up Track are written in Track's own ObjectTrack language. This means that source code is automatically generated when developers drag and drop objects onto the screen. Users said the structure of the language was consistent with other visual languages such as Microsoft's Visual Basic and Powersoft Corp.'s PowerBuilder.

Health systems provider: "All we had to learn was the syntax. Our prior programming knowledge kicked right in."

Data navigation

Evaluators described Track's drill-down function as the product's most useful feature.

Nonprofit organization: "The templates Track provides, which help create the drill downs, makes prototyping environments very fast and easy. The hard part is already done for you."

Integrating data from other sources

Because Track builds applications that can access and present information from multivendor, multipurpose environments, it fully complies with most industry data interchange standards and includes a set of Open Database Connectivity drivers.

Users said database links were easily set up and reliable regardless of the database platform.

Nonprofit organization: "We have created two links, one to our AS/400 database and the other to FoxPro on our PC network."

Tracking company: "The key is learn-

TRACK FOR WINDOWS 1.2

Intelligent Office Co.
Orlando, Fla. (407) 236-9753

Results are based on a 5-to-5 scale where 5 means extremely satisfied and 1 means not at all satisfied. Ratings represent the average of the four users' satisfaction ratings weighted by the category importance. Total score is the average of all ratings.

TOTAL SCORE	7.0
SIMPLY INTEGRATE DATA FROM OTHER SOURCES	7.6
RESPONSE TIME	6.1
EASE OF DEVELOPMENT	6.6
INTEGRATE DATA FROM OTHER SOURCES	8.1
SUPPORT	7.5
FUNCTIONALITY OF SCREEN DESIGN	7.2
EASE OF USE OF DEVELOPMENT LANGUAGE	6.9
VALUE FOR THE DOLLAR	6.3

ing how the database you're accessing is set up. Building the actual links is no big deal."

Ease of development

Those who had experience with Windows application development easily picked up the development environment; but Track was unable to coordinate the efforts of multiple developers working on the same functional area.

Nonprofit organization: "Track assumes there is only one person working on the application. We had to segment the application into different components so we could have more than one developer working" on it.

Response time

How efficiently users navigate through data and achieve a desirable response time is primarily a function of database design. This varies with Track because the environment is dependent on the database to which it is linked.

Tracking company: "We did quite a bit of summarization on our database so that we would get the response time we needed. It also improved how efficiently we could navigate through the system."

Burden is Computerworld's senior researcher.

Intelligent Office responds

Intelligent office marketing manager Adrian Marshall responded to the issues raised in this evaluation.

Multideveloper coordination: Currently, developers are able to work on the same application only if they work on different functional areas. Coordinating multideveloper efforts will be easier with Release 2.1, due to ship at the end of January. The key will be the

ObjectWarehouse, which supports the concepts of goods-in, goods-out, inventory, subscription and ownership. Developers will be able to share objects by checking them in and out of the warehouse, but only one developer will be able to work on the objects at a time.

Custom applications: Developing industry- or business-specific Track applications is now possible with the

company's object-oriented architecture. Because each piece of functionality is fully encapsulated, there is a high degree of reusability that allows an assembly-by-component approach.

With the assistance of third-party developers, Intelligent Office will release a Track application for the health industry in March, the retail sector in April and the insurance industry in June.

We
think you
should buy
our UNIX
system.

By becoming
the first to offer
64-bit

"DEC OpenView represents a new generation of commercial UNIX...with good functionality, efficiency, modularity, and plenty of room for growth."

6/94

But maybe
you should get
a second
opinion.

And a third. And a fourth.



No matter how many expert opinions you get, they'll all agree: Digital's DEC OSF/1® is the ideal UNIX® offering for a broad range of businesses. Here's what the experts are raving about:

- Best standards compliance
- Outstanding reliability
- The highest-level availability
- Incomparable performance
- 64-bit Alpha technology
- Wide variety of applications

And, most importantly, no costly future conversions, because you're already where everyone else will be going.

True to its heritage, Digital has managed to engineer its way to a full-featured high-performance UNIX®.

So if you're looking for a UNIX system to grow with, put DEC OSF/1 on your short list.

It's a decision everyone will applaud.

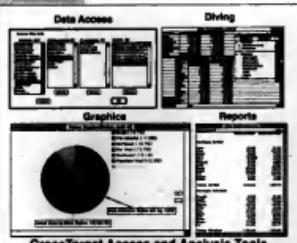
To receive copies of these independent evaluations, call 1-800-DIGITAL. For more information, contact your Digital Business Partner or Digital.

digital

End-user and developer tools for business access and analysis

(Note: This is not an all-inclusive list. It is a sampling of leading products based on those readers that responded to a request for information.)

PRODUCT	COMPANY	DESCRIPTION
AccessOffice Enterprise Solution 1.1	AccessOffice Corp. [Formerly Intelligent Software, Inc.] Boston, Mass. (617) 251-2000	Multidimensional solutions and tools for developing enterprise OLAP applications.
Business Objects 3.1	Business Objects, Inc. Sunnyvale, Calif. (408) 251-2000	End-user reporting, analysis and access tool for corporate data in heterogeneous environments.
ClarityAccess™ 4.0 ObjectManager	ClaritySoft, Inc. Atlanta, Ga. (404) 455-4320	End-user solutions querying, reporting and client/server data access management tools.
Comstar EIS 4.0	Comstar, Inc. San Mateo, Calif. (800) 255-2000	Client/server version of EIS with multidimensional storage, analysis and data access.
Cross Target 1.0 Cross 3.0	Dimensional Insight, Inc. Washington, Mass. (617) 250-5000	OLAP tools that offer multidimensional access to large data volumes.
Enterprise Resource Planner Server 2.0; eEmpower	eGlobeSoft, Inc. New York, N.Y. (212) 515-0000	OLAP database designed for easy access by Windows applications.
EPMware Analytics Server 3.1	EPMware, Inc. Bengaluru, India. (91) 80-250-2000	OLAP database for end-user access to enterprise data.
Express EIS 4.5; Express Financial Management System 4.5; Data Server Analyzer 5.0	Information Resources, Inc. [SI Software] Mountain View, Mass. (617) 955-2000	Multidimensional EIS, decision-support system and distributed financial analysis forecasting, planning, reporting and marketing analysis tools.
gViewpoint	Right Information Systems, Inc. Boston, Mass. (800) 855-0000	Based network-based analysis, modeling and forecasting tools.
InfoOut 1.0 InfoOut Analyzer 1.0	Open Data Corp. Lexington, Mass. (617) 455-4300	Data sources and information modeling tools for client/server.
Focus Reporter 1.0 Focus Professional Focus EIS	Information Builders, Inc. New York, N.Y. (212) 250-4000	End-user reporting and analysis tools; decision-support systems and EIS applications development for client/server.
Focus & Trends 2.1 Service 1.0 InfoProc 1.1	Trends Corp. Palo Alto, Calif. (415) 255-4000	Client/server data analysis and reporting tools for end users with development tools for building decision-support systems, data mining and access.
PW Suite	Webtivity Corp. Pleasanton, Calif. (800) 255-2000	Decision-support systems for forecasting, sales analysis, business planning and projections.
InterConnect 3.0 PowerPlay 4.0	InterAct, Inc. Washington, Mass. (617) 250-0000	Multidimensional analysis, interaction and end-user data access and reporting tools.
LayerShop 4.0 LayerShop Server 2.0	Altair Software, Inc., subsidiary of the 3D Simulation Group, Cambridge, Mass. (800) 254-0000	EIS with proprietary OLAP server and multidimensional data management, analysis and reporting tools.
OLAP Server OLAP Server OLAP Server	SSRI, Inc. Mountain View, Calif. (415) 255-0000	Object-oriented application development software for managing and publishing analysis.
AMIS OnBase AMIS Fusion 1.1 Hyperion	AMIS, Inc. Mountain View, Calif. (800) 255-2000	Financial reporting, data management, analysis and access tools.
Metamaine	Metamaine, Inc. Weston, Mass. (617) 255-0000	Data access and analysis tools for heterogeneous PC and client/server environments.
DataPublisher 2.0 Publisher Plus 1.0 Publisher Gold 1.0	MSI Solutions, Inc. Boston, Mass. (617) 255-0000	End-user data access, querying, reporting, forms, charts and updating tools.
Power Measurement Manager 4.0	Power Solutions, Inc. Cupertino, Calif. (408) 455-4000	EIS version of performance tracking and management system.
Raw Stock Warehouse	Raw Stock Systems Los Gatos, Calif. (408) 255-2000	Client/server data warehouse, designed for business analysis applications.
SAS/3DS	SAS Institute, Inc. Cary, N.C. (919) 977-0000	EIS component of the SAS system for application development and applications in financial analysis, project management, forecasting and quality improvement.
Spreadsheets Matrix EIS	Spreadsheets Corp. Toronto, Ontario, Canada (905) 255-0000	EIS and application development, forecasting and reporting tools.
Track for Windows 1.2	Intelligent Office Co. Sakai, Osaka, Japan. (81) 60-250-0000	Object-oriented EIS application development system that works with OLAP and relational databases.
Visioneer Enterprise	Visioneer Software, Inc. Seattle, Wash. (206) 255-0000	Web-based decision-support tools for financial analysis and order processing.
Visualizer	SSRI, Inc. Mountain View, Calif. (800) 255-2000, ext. 107	Mobile software for data querying, analysis and presentation.



CrossTarget Access and Analyze Tools

Dimensional Insight's Cross Target multidimensional analysis and reporting software conforms to the rules of OLAP and can handle unlimited dimensions.



Altair Software's EPMware Analytics Server 3.1, a multidimensional database, works with a number of different packages, including Microsoft's Excel.

In Depth

DIRECTORY of 1994 IN DEPTH articles

JANUARY

- 1/1 The Mac's 10th anniversary. *By James Daly*
- 1/11 Internal integration of client/server systems. *By Julie King*
- 1/21 Interview with Michael Hammer. *By Joseph Maglitta*
- 1/23 Soundoff: OS/2 vs. Windows NT

FEBRUARY

- 2/7 Interview with "the father of the Internet," Vinton Cerf. *By Gary H. Antles*
- 2/14 Tribulations of application partitioning. *By David Baum*
- 2/21 IS managers are just plain lazy. *By Peter De Jager*
- 2/28 Soundoff: Pure object vs. object-relational DBMS

MARCH

- 3/7 The business mapping boom. *By David Buried*
- 3/14 Mainframes speak out about learning client/server skills. *By Joe Paupirito*
- 3/21 On being a female CEO in the computer industry. *By Sandra Kurtzig*
- 3/28 Soundoff: Who is liable for faulty software?

APRIL

- 4/4 Using on-line services to troubleshoot tech problems. *By Brian C. Boland*
- 4/11 Software development pros talk about new tools, budgets and legacy systems. *By Lucy Zottola Diaz*
- 4/18 What's wrong with the AI industry. *By H. P. Newquist*
- 4/25 Soundoff: Is Cobol dead?

MAY

- 5/2 Stop creeping user requirements. *By Gary H. Antles*
- 5/9 The headaches of LAN-based E-mail. *By Avery L. Jenkins*
- 5/16 How to repel a wily hacker. *By William R. Cheswick and Steven M. Bellovin*
- 5/23 Interview with Visualic developers Dan Briskin, Bob Frankston and Julian Lange. *By Steve Moore*

JUNE

- 6/6 Technology applications that benefit mankind. *By CW staff*
- 6/13 A humorous look at computer history. *By Michael Cohen*
- 6/20 Interview with virtual reality guru Jaron Lanier. *By Joseph Maglitta*
- 6/27 Soundoff: Is E-mail private or public?

JULY

- 7/4 The secrets of exceptional system design. *By Alice LaPlante*
- 7/11 Diary of a virus invasion. *By Phillip Zalns*
- 7/18 How end users help us. *By Alice LaPlante*
- 7/25 Soundoff: The Clipper chip controversy

AUGUST

- 8/1 Business managers should take some responsibility for IS failures. *By Larry Runge*
- 8/8 Offshore programming that works. *By Martin LaMonte and Elizabeth Hechtler*
- 8/15 The good, bad and ugly of wizard programs. *By Brynnan Fyger*
- 8/22 The object-oriented programming survival guide. *By Carl A. Argiro*
- 8/29 Soundoff: Can programmers commit malpractice?

SEPTEMBER

- 9/5 Common networking disasters. *By Kevin R. Sharp*
- 9/12 The outsourcing project from hell. *By Gary Garkick*
- 9/19 IS managers speak out about client/server. *By Paul Gillin*
- 9/26 Soundoff: Is re-engineering a dangerous idea?

OCTOBER

- 10/3 Interview with eight Internet pioneers. *By Gary H. Antles*
- 10/10 Redesigning the business process with rapid prototyping. *By Patricia E. Seybold*
- 10/17 Excerpts from the book *Showstopper!* on the making of Windows NT. *By G. Pusey Zachary*
- 10/24 Starting from scratch to get a truly customer-driven system. *By Larry Runge*
- 10/31 Soundoff: Is client/server a fad?

NOVEMBER

- 11/7 Renovate, don't obliterate, your legacy systems. *By Ron Berry*
- 11/14 Client/server horror stories. *By James H. Johnson*
- 11/21 CompuServe system operators offer tips on getting fast responses. *By Paul Youngworth*
- 11/28 Soundoff: Ban business use of the Internet

DECEMBER

- 12/5 Interview with *Cyberspace* and the *Law* author Edward Caivano. *By Derek Stalter*
- 12/12 Soundoff: Is the Mac dead for business use?





The COMPUTERWORLD Comedy Store

"Oops - I forgot to log off again."
One-size fits all. 50/50 blend, cotton/polyester.
Made in U.S.A.
T-shirt ... \$12.99
Sweatshirt ... \$14.99

Now only
\$7.99

**Sale
50%
Off!***

"What's the digital bathroom scale doing in my laptop case?"
30 oz./800 ml bottle with
infuser ... \$14.99

Now only
\$5.99

"Don't panic!
Just push the escape key."
White ceramic 10 oz.
mug ... \$7.99

"What's the digital
bathroom scale doing
in my laptop case?"

Rommy 100% natural cotton
canvas with webbed straps,
14" x 19" ... \$12.99

Now only
\$6.49



Now only
\$8.49

"Don't panic!
Just push the
escape key."

Durable and roomy,
18" x 12" black cotton
canvas duffle bag -
includes sturdy
webbed straps and
zipper. Made in
U.S.A. ... \$14.99



"There! There!
I swear, it just
moved again!"
Mousepad, 9" x 7 1/2"
... \$7.99



*selected items only

The COMPUTERWORLD Comedy Store To order: Fax 508-626-8258 or Call 1-800-222-7545.

Item	Price	Quantity	Amount
CTAD5 Mug	\$7.99		
CTAD5 Slip-it	\$5.99		
CTAD5 Mousepad	\$7.99		
CTAD5 T-shirt	\$7.99		
CTAD5 Sweatshirt	\$12.49		
CTAD5 Duffle	\$8.49		
CTAD5 Tote Bag	\$6.49		
AMOUNT DUE* Please indicate Shipping & Handling. *For shipping and handling add \$1.00 for each item. UP To \$10.00 - \$10.00 \$10.01 - \$20.00 \$2.00 \$20.01 - \$30.00 \$4.00 \$30.01 - \$40.00 \$6.00 \$40.01 - \$60.00 \$8.00 \$60.01 - \$100.00 \$10.00 OVER \$100.00 \$13.00			
*Postage and handling extra, minimum \$1.00 \$0.00 per item for shipping and handling.			

Shipping
&
Handling

Subtotal
Shipping &
Handling
Sales Tax**
Total

MAIL TO: **COMPUTERWORLD**

P.O.Box 8171
Framingham, MA 01701 U.S.A.
Attn: Product Fulfillment
(Monday - Friday 8:30-5:30 EST)

SHIP TO:

Name _____

Company _____

Address (Please use street address, UPS does not deliver to P.O. Box) _____

City _____ State/Prov _____ Zip/Postal Code _____

Country _____

Daytime Phone _____

Method of Payment (check one or more)

Check or Money order payable to: **COMPUTERWORLD**

VISA MC AMEX

Card No. _____

Exp. Date _____

Signature _____

Your credit card will not be charged until your items are shipped.

Thank you for your order!

COMPUTERWORLD

The Newspaper of IS

** Residents of MA, CA, NJ, GA and DC, add applicable sales tax. Canada residents add G.S.T.

Conference Call



Computerworld's Corporate Technical Recruiting Conference

Suburban Denver, Colorado

June 11-14, 1995

For more information, call

1-800-488-9204

Clip and **FAX** this coupon to **1-800-875-3262** or call **1-800-488-9204** for more information.

Please place my name on your mailing list, so I'll receive registration materials and information throughout the year.

Name _____ Title _____

Company _____

Address _____

City _____ State _____ Zip Code _____

Phone _____ Fax _____ e-mail _____

CRC

No rest for the weary

An increasingly sophisticated group of Windows users is demanding more from trainers, but the majority still needs a strong foundation in the basics

By Cheryl Gerber

Time is nipping at the feet of Windows trainers. To keep up, they must be fast and flexible, staying steps ahead of the technology and adapting to curricula on short notice to accommodate students with varying degrees of knowledge.

"We [revamped] our introduction to Computers course entirely because of how our audience was changing," says Sam Warfel, national manager of instruction at AT&T Professional Development Center in Englewood, Colo. "We need instructors who are certified in every higher levels of software to accommodate the growing diversity in the classroom."

Keeping up with the students

In response to more sophisticated questions from students, Warfel broadened his coverage to include CD-ROM, the Internet and multimedia. He incorporated more conceptual teaching instead of merely a how-to approach.

For example, Warfel teaches the basic concepts of networking by using the telephone as an analogy. "We try to plug in something they already know," he says. To convey the concept of a CD-ROM, he cites the CD player, which digitally codes the wave forms of music just as a CD-ROM encodes the bits that make up data files.

"Our course has become more focused on how to integrate spreadsheets into word processing and how to send E-mail

from it," says Bob Jackson, director of product line management and desktop training at National Education Training Group in Naperville, Ill.

While the biggest opportunity and challenge for trainers may come with Microsoft Corp.'s Windows 95, the next version of Windows, most trainers have yet to get their hands on it. When Microsoft shipped the first beta version of Windows 95 in June, the company did not release it to trainers. By the time the second beta began shipping last month, trainers had grown impatient. "It's frustrating that Windows 95 has been delayed so many

times," Jackson says.

Although many training organizations handle their own certification process, Microsoft offers certified professional trainer courses, including the Pre-release Windows 95 course for \$1,125. Upon completion, trainers take an exam. If they pass, then they can purchase Microsoft's Certified Windows Trainer Kit for \$250. The first Microsoft Windows 95 course ran earlier this month and will run again in February in Bellevue, Wash.

Despite the growing sophistication of trainers and students, however, the most

On training methods

Accelerated learning uses the senses to entice the learning process. It stimulates the right brain, which deals with pictures, colors and music, rather than the left brain, which handles linear, logical and sequential thinking.

"We play Beroquemusic, such as Vivaldi's 'Four Seasons,' as students enter the classroom. Studies have shown that when people listen to that music, their heart slows down and they relax. This puts them in a better frame of mind to learn," says Sam Warfel, national manager of instruction at AT&T Professional Development Center.

Warfel also has mobiles that say "Minimize," "Maximize," and "Restore" in the primary colors hanging from the ceiling. Just the presence of bright colors engages the right brain and aids learning, he says. Color codes also help students quickly identify what they're trying to learn.

"We use a balloon to describe RAM," says Warfel, who blows up the balloon more each time he tells students that an application is added to the system. When RAM is overloaded, Warfel pulls a knife out of his pocket and bursts the balloon.

—Cheryl Gerber

common Windows classes still tend to be the basics: understanding the function of icons, navigating the mouse, running multiple Windows simultaneously or copying data between a hard drive and a disk.

"Our No. 1 seller is still Beginning Windows. This is the biggest area in demand to teach," says Robyn Vescovi, training manager at Executrain Corp. in New York.

Some programs have covered optical character recognition (OCR) more than Object Linking and Embedding (OLE). Ray Snyder, manager of product training at Ricoh Corp. in West Caldwell, N.J., trains Ricoh's sales representatives in Windows OCR. "With the upcoming growth of scanning, we have to teach more Windows-based OCR before we teach OLE. We're introducing a Windows-based combination product that is a fax, printer, copier and scanner rolled into one. It's essentially a communications gateway that will allow binary file transfer and can be prompted by E-mail," Snyder says.

Given the breadth of Windows' products slated for release, including AI Work and Windows 95, the opportunities for Windows trainers abound if they keep up with technology.

Gerber is a business and technical writer in Cold Spring, N.Y.

CONSULTING & FULL TIME POSITIONS

CDI is a full-service provider of consulting and professional services. We offer a wide range of services including management consulting, strategic planning, systems analysis, design, implementation, and support. Our clients include Fortune 500 companies and smaller businesses. We are currently seeking candidates for the following positions:

- 1. DATA PROCESSING
- 2. INDEPENDENT CONTRACTOR
- 3. CONSULTANTS
- 4. EXECUTIVES

ONLINE Number
515-386-3423
Contact DCD on 1800/1400
Local Master 8-8-1
A service of DDC Online, Inc.
515-386-1144

DATA AID, INC.

People Who Know Computers
"A premiere consulting & contracting company"

Immediate openings in Birmingham, AL,
Atlanta, GA and surrounding cities:

- CIO/OL, INIS, DBS, CICS
- UNIX, C, C++
- Lotus Notes
- Sunsoft, GUI, OO
- Autodesk, 3D/M exp.
- Oracle, Frontend
- X, Windows
- Sequant Windows
- VAX, VMS, COBOL
- Visual Basic
- AS/400 AS400
- Peoplesoft Technician
- C/C++, C
- SAP, R/3
- AB Initio
- AB Initio

Please fax or mail resumes to:
1655 Data Drive, Suite 155
Birmingham, Alabama 35344
Fax: 1-205-987-1614
Phone: 1-800-987-2878

CDI INFORMATION SERVICES division of CDI Corporation

is one of the leading providers of professional services to a variety of skills including:

EAST

- Available positions include:
PA, VA, KY, WV,
MD, West, DC
- PowerBuilder
- Oracle, Schema
- 985 DB2/DB2/2
- GUI, MFC
- C, C++, UML

Send resumes to:
6000 Executive Park
Suite 200 - CW
Chevy Chase, MD 20811
Tel: (703) 973-4760
Fax: (703) 225-7256

SOUTHEAST

- Available positions include:
NC, FL, GA
- UML, C/C, C, C++
- Smithfield
- Oracle, Informix, Sybase
- DB2, MySQL, COBOL II
- Lotus Notes & Domino
- Lotus Notes Administrator

Send resumes to:
5000 Regent Business Park
1150 S.E. 10th Street
Gainesville, FL 32601
Tel: (904) 394-2124
Fax: (904) 397-7460
e-mail: cdi@cdi.com

CDI Information Services is a provider of professional Data Processing personnel. With over 27,000 technical people on assignment, CDI offers a variety of skills including:

MIDWEST

- Available positions include:
TX, CO, NE, MO,
- UNIX System Administrator
- UNIX Programmers
- AS/400 Software Engineers
- AB Initio, COBOL, CICS
- Oracle, Sybase, Informix
- Cellar and PGI
- COBOL, C, C++, Smalltalk

Send resumes to:
9025 Wedgeworth Blvd.
Suite 270 - CW
Wheaton, IL 60087
Tel: (847) 875-9560
Fax: (847) 875-9511
cdi@cdi.com

WEST

- Available positions include:
AZ, CA, UT, CO
- MS-DOS, DB, COBOL
- AMI, INC ID
- Oracle, GUI, C
- Oracle, SQL, Ingres, Schema
- COBOL, CICS, DB2

Send resumes to:
2325 W 10th Street
JFK 216 - CW
Tucson, AZ 85701
Tel: (602) 746-9540
Fax: (602) 746-9511
cdi@cdi.com

Computer Careers

Midwest

SENIOR SYSTEMS ANALYST

Dinner, Michael, population \$4,000. Beginning Salary \$20,000-\$25,000. Minimum experience and highly recommended. Excellent opportunity for a young man or woman with a desire to work in a growing company. From CMC '93 CMC VERS is a client server environment designed to support LAN based Local and Wide Area Networks. The company has a strong background in the research, development, and administration of computer software for accounting, tele-communications, spatial analysis, information systems, and management. CMC VERS is involved in the planning and technology of the future of business, engineering, the physical sciences, and the arts. This position requires and coordinates the operations of city wide systems and associated administrative functions. Duties include: Application Development, Database Management, Computer Systems Analysis or related field. Most positions require knowledge of DBMS, microcomputer systems, and computer networks. Experience required: Minimum of three years experience as a supervisor's employee and three (3) years experience in systems/technology development and management. Experience in systems/technology development and management. Experience in budgeting, profit and loss, and financial accounting systems preferred. Apply Charles L. Phillips, Human Resources Manager, One CMC, Anderson Place, Seattle, WA 98101.

Systems Engineer-Design, Best implementation and documentation programs in Windows and DOS, DB2 and spreadsheet applications, experience with UNIX, C/C++, Basic Development work in helping build applications using Visual Basic, experience with DCR (Digital Character Recognition), Profici B, in Computer Science, Software or Electrical Engineering, 10 years in the field offered or 5 years in a related occupation such as Systems Analyst, Experience with design and development software under Graphics User interface, and experience in working with DCR (Digital Character Recognition) Will assist three years of computer system education and experience 40 hours per week, 8:00 am - 5:00 pm, \$15.00 per hour, 7210 W. Hampden Ave., #100, Denver, CO 80231, Attn: Mr. John M. Koenig, Ref. #2000, "Employee Part Ad"

Programmatic Analysis (3 Posts)-Performance of NATURAL and INDIVIDUAL financial programs and their impact on 1994 revenues. Analysis of potential difference between TIGER and NATURAL/INDIVIDUAL developments of the financial program in COORI. A report will be up in my office. Restoration is averaging client job rates at approximately 6 months to one year. Total cost of restoration is \$34,000,000.00 and projected to be \$34,000,000.00 by 1995. 10. M/F Apply at the Texas Department of Corrections, Dallas, TX 75247 or call 1-800-442-1111. Report: 4947-Austin, TX 78701. TDCJ#1176031
12/21/1998. An add paid on Equal

PENNINGTON & SCHURTER, INC.
IMMEDIATE OPENINGS for
PROGRAMMER/ANALYSTS
MANUFACTURING COROL, OCS,
OCS, ms/DW/DC, Arthur
Andersen DCS plus.
CHARGE SYSTEMS, PowerBuilder,
Sybase, Visual Basic/Access,
Oracle, Access, FoxPro.
432 W. Jefferson St.
Milwaukee, WI 53263
FAX: 414-263-8970

Results.

Computer-world gives recruitment advertisers results. Weekly. Regionally. And Nationally.

To place your ad, call Lisa McGrath at 800-343-6474 (in MA, 508-879-0700).

**Weekly. Regional.
National.
And it works.**

An IDG
Communications
Publication

Now you can access

I.S. careers on a regional on-line database for the Southwest!

See jobs from:

Cutler/Williams
Dell Computer Corporation
EDS
and many more companies.



**For questions about
using the service to access jobs,
call our information line
at 1-800-343-6474, x524.**

**For information about posting jobs
to the service, call F. Jay Savel
at 1-800-343-6474, x184.**

**This service is available
at no cost to job seekers.
(Callers outside of Texas
Incur the cost of their telephone call.)**

Computer Careers

MANAGEMENT OPPORTUNITIES

We are a \$1B progressive corporation located in Dallas. In order to position our organization for continued growth, we currently are seeking the following MIS Managers to join our company.

NETWORK SERVICES MANAGER

The Network Services Manager will be responsible for the implementation, planning, installation, and operations of all corporate Local Area Networks and Wide Area Networks. This individual will coordinate the acquisition, installation, and operation of all network components required to support the company's business needs. Experience with "open" business software. The ideal candidate will possess 5-8 years experience in the management of LANs and WANs. Knowledge of UNIX, Novell Netware, SNA, TCP/IP, HiperLAN, and Project Management along with experience in Oracle Client Servers and IBM mainframe applications required. Experience with HP and IBM Client Servers also required.

CHIEF ARCHITECT

This position is responsible for overseeing the technology planning and implementation related to MIS project teams, delivering new or enhanced technology based business solutions. The individual will also develop, maintain, and ensure compliance with Quality Assurance and Configuration Management standards, policies, and procedures. The ideal candidate will have 5-8 years experience in the design and implementation of Client Server related technology infrastructures. Knowledge of integrating Client Server based applications and components with IBM mainframe environments. Experience with the following technologies and methodologies are required: UNIX, Novell Netware, Windows, Oracle Forms 4.5 and/or Powerbuilder, Oracle and Sybase database technologies. Experience in designing and implementing a Client Server or related systems methodology, to include PC or LAN implementation.

Please forward your resume along with salary history to: Confidential Reply Service, c/o MBRK Advertising, Dept. JW-CW, 3100 Monticello Ave., 6th Floor, Dallas, TX 75205.

No phone calls please.

Senior Systems Engineer

ISIS Information Systems is Europe's leading developer of IBM Client/Server document solutions. For our US operation based in New Jersey, we look for the following skills for consulting and pre-sales activities:

- IBM/390 VM or MVS experience.
- PC-LAN with Windows and OS/2.
- IBM AFP or office know-how.

ISIS product training would be in Austria. Salary negotiable. Travel in the US required. Please FAX resume to (01) 43-226-2108 or via INTERNET atphs9hs@ibmmail.com

Looking for qualified computer professionals?

Look no further. More than one half million computer professionals read Computerworld every week. And you can reach all of them -- or just the ones in your region -- with a regional or national recruitment advertisement in Computerworld's Computer Careers section.

For more information, call Lisa McGrath at 800-343-6474 (in MA, 508-879-0700); or call your local sales office listed below:

BOSTON

Nancy Porvald
375 Constitution St., Box 9171,
Framingham, MA 01701-9171, 508-879-0700

NEW YORK

Marty Finn
375 Constitution St., Box 9171,
Rochelle Park, NJ 07662, 201-587-0090

WASHINGTON, D.C.

Kate Kress
8304 Professional Hill Drive,
Fairfax, VA 22031, 703-573-4115

CHICAGO

Patricia Powers
1011 E Touhy, Suite 550,
Des Plaines, IL 60018, 708-827-4433

LOS ANGELES

Barbara Murphy
2171 Campus Drive, Suite 100,
Irvine, CA 92715, 714-250-0164

CONSULTANTS

- All Technologies
- Nationwide Openings
- Salaried or Project Basis
- 2+ Year Experience

Analyst/Programmer/Corp.
P.O. Box 29612
Minneapolis, MN 55429
Fax (612) 997-4993

CONSULTANTS SHOULD CONSULT

MIMI
IMMEDIATE CONTRACTS
Professional Services
1000 N. Rockwell Street, Suite A-200
Milwaukee, WI 53207
(414) 765-1705
FAX (414) 765-1756

www.mimicontract.com

© 1994 MIMI

1000 N. Rockwell Street, Suite A-200

Milwaukee, WI 53207

(414) 765-1705

FAX (414) 765-1756

PROFESSIONALS

Systems Network is a professional services firm specializing in Information Technology and MIS career opportunities nationwide. With over 1000 professionals based in the Southwest, we are searching for contract and full-time professionals who have a minimum of two years' experience in one of the following:

- Application Developers
- Database Developers
- COBOL, CICS, DB2
- DB2/UDB, Oracle, Sybase Admin.
- Internet/WWW & SQL
- PowerBuilder
- Visual Basic
- Windows NT
- UNIX, C/C++

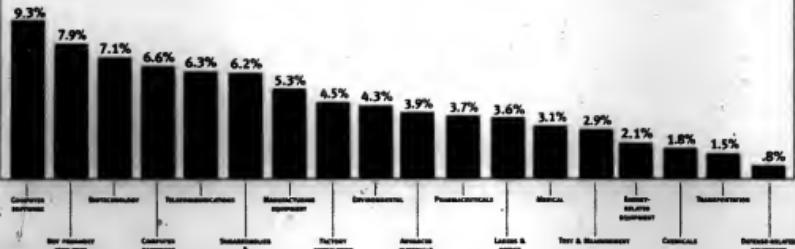
For immediate consideration, please fax or e-mail your resume to:

Systems Network
1000 N. Rockwell Street, Suite A-200
Milwaukee, WI 53207

(800) 676-0812 • Fax: (414) 282-1653

Computerworld/Corptech Career Index

Percent change in number of employees from...



© Copyright 1994, Computer Technology Information Services, Inc., Woburn, Mass.



"From some 600 responses generated by a recent Computerworld recruitment advertisement, we've already hired about 50 professionals who were direct replies — and we're still hiring from that advertisement."

Having just celebrated its 25th anniversary and exceeding \$10.6 billion in revenue, MCI is not only the nation's second largest long-distance provider, but also the world's fifth largest carrier of international traffic. Because the Systems Engineering Division plays a strategic role in shaping MCI's technological future, Recruiting Manager Jason Whitehair relies heavily on Computerworld to help recruit leading-edge professionals.

"Dedicated to delivering premier customer service and the highest quality products, Systems Engineering provides systems and software development and support all of MCI's domestic and international voice and data businesses. Everything from message processing and commercial billing ... to network management and control ... to MCI Mail ... and more. Take our Friends & Family program, for example. Our software applications are what keep track of millions of 'calling circles' and generate customized bills.

"Not limited to any one platform, we utilize the platform best suited to deliver each customer service. So I'm always looking to recruit systems engineers with at least five to seven years of experience in a wide range of technical environments. Because Computerworld is one of the best trade publications for staying on technology's leading edge, its readers are the professionals we're generally looking to recruit. When it comes to recruitment advertising, Computerworld delivers a much higher ratio of qualified candidates than daily newspapers or nontechnical publications.

"The vast majority of resumes generated by our Computerworld recruitment advertise-

*Jason K. Whitehair
Recruiting Manager/Systems Engineering
MCI Telecommunications Corporation*

ments are from very high calibre candidates. We're typically able to use 350 out of every 400 resumes we receive — and that's a hit rate of nearly 90%. In fact, from some 600 responses generated by a recent Computerworld recruitment advertisement, we've already hired about 50 professionals who were direct replies — and we're still hiring from that advertisement. For a single advertising investment, we've more than gotten our money's worth.

"After Systems Engineering moved from Washington, D.C., to Colorado Springs back in 1991, our Computerworld recruitment advertising has been instrumental in helping us hire more engineers than usual — and hire them fast. And, since I'm still seeing activity as a result of a recruitment advertisement we ran five months ago, I know we get sustainable impact with Computerworld."

"As MCI continues to expand into the long distance market including data transmission, 800 service, international calling, and Personal Communications Services (PCS), we'll continue to rely on Computerworld recruitment advertising to attract the hard-to-find, highly qualified technical people our global business demands."

Computerworld. We're helping Information Systems employers and qualified Information Systems professionals get together every week. Just ask MCI's Jason Whitehair.

To put Computerworld to work for your hiring effort, call John Corrigan, Vice President, at 1-800-343-6474. And place your hiring message where the qualified candidates look. Every week.

1 800 343-6474
in MA 508 879-0700

COMPUTERWORLD

Where the qualified candidates look. Every week.



"...Computerworld Direct Response Cards consistently generate the highest profits of any deck we've tried."

A software developer based in Chicago, cSOFTWARE has been providing communications solutions to computer professionals in the IBM and compatible arena for over a decade. Because Computerworld appeals to a large base of both mainframe and PC professionals, Vice President Mary Cooper just recently expanded the company's Computerworld Direct Response Card advertising to include all three of their communications products.

"To generate sales for Across the Boards, a communications toolkit for developing cooperative applications, and pcMAINFRAME, a generalized mainframe-to-mainframe file transfer system, cSOFTWARE has been advertising in Computerworld Direct Response Cards almost from the very start. Now, based on our past success, we've also started to advertise pc2POWER, our newest file transfer system. Since all of our products facilitate mainframe-to-micro communication, we need to reach IS managers and technical support professionals on the mainframe side as well as end users on the PC side. That's why Computerworld Direct Response Cards, with their large audience of buyers most apt to need our products, are one of our primary advertising vehicles.

"Clearly, Computerworld Direct Response Cards take the 'hit or miss' out of advertising by qualifying our audience for us. We call it our high-profile deck because we not only get high visibility and a high rate of response but also convert a high volume of leads into sales. With their excellent cost

- Mary Cooper
Vice President
cSOFTWARE, Inc.

per lead, Computerworld Direct Response Cards consistently generate the highest profits of any deck we've tried.

"In fact, we can always tell when our Computerworld Direct Response Card advertising hits because of the sudden surge in sales activity. Business really starts hopping with more phone calls and more mail. It's a real morale builder! But most importantly, every time we advertise in Computerworld Direct Response Cards we receive well over 100 leads. Sometimes we even get responses six months later, so we know Computerworld Direct Response Cards have a long shelf life that gives cSOFTWARE valuable exposure for building awareness and share of mind over the long term."

"While reasonable rates for color and multiple insertions add considerable appeal, the large quantities of quality leads generated by every card we run is our key incentive for stepping up cSOFTWARE's advertising schedule in Computerworld Direct Response Cards."

Computerworld Direct Response Cards give you a cost-effective way to reach a powerful buying audience of over 139,000 computer professionals in the U.S. They're working for cSOFTWARE - and they can work for you. Call Norma Tamburino, National Account Manager, Computerworld Direct Response Cards, at 201/587-8278 to reserve your space today.



COMPUTERWORLD DIRECT RESPONSE CARDS

Where you get direct access to quality sales leads.

1 800 343-6474
IN MA 508 879-0700 x247

Conference Call



EDSIG's Worldwide Conference on Information Systems Education

Suburban Denver, Colorado

June 11-14, 1995

**For more information, call
1-800-488-9204**

Clip and FAX this coupon to 1-800-488-9202 or call 1-800-488-9204 for more information.

Please place my name on your mailing list, so I'll receive registration materials and information throughout the year.

Name _____ Title _____

Institution or Company _____

Address _____

City _____ State _____ Zip Code _____

Phone _____ Fax _____ e-mail _____

WISE

Marketplace

SPREADSHEETS SPRY ENOUGH FOR MOST USERS

By
Julie
Hart

California Federal Bank uses Microsoft Corp.'s Excel as its main tool for reporting and analysis. In the bank's Controllers Division, analysts run Excel on 486- and Intel Corp.'s Pentium-based PCs to consolidate accounts from the bank's 40 branches.

"Each company is set up on its own [spreadsheet], so we can do as much [multidimensional] analysis as we want," says Robert Megerdichian, the firm's consolidation supervisor. Megerdichian can monitor account variances month to month for one company, several companies or all 40 companies. "[Excel] gives us all of the analytical features we need," he says. "It'll never outgrow it."

Similarity. Arrow Gear Co. uses Lotus Development Corp.'s 1-2-3 Release 5 for Windows to track sales and perform rate studies. "We can create sales reports by product, region, salesperson, customer — you name it," says Jim Park, information systems manager at the Downers Grove, Ill., company.

Such contentment with spreadsheet analytical capabilities is interesting given the competition — multidimensional on-line analytical processing tools. These tools may present information in very sophisticated ways, yet analysts say it's unlikely that spreadsheet users will jump ship, in fact, according to Bryan Fukuda, an industry analyst at Data-

quest, Inc. in San Jose, Calif., only the "high-end power users" might benefit from analysis tools.

Moreover, in the last major release of Excel and 1-2-3, the vendors added a number of statistical analysis functions, says Daniel Gasteiger, an independent consultant in Lewistown, Pa. For example, Excel Version 5.0 sports new methods for analyzing data, including automatic calculations such as comparisons, averages and percentages of totals, pivot tables for multidimensional analysis and Microsoft's Object Linking and Embedding 2.0 support for access to multiple applications. Other leading spreadsheet vendors have done the same.

Yet as the features bar is raised, so is the amount of memory and processing power required. Arrow Gear knows this only too well. IBM's PS/2s adequately handled previous versions of 1-2-3, but since the company moved to Release 5 for Windows, its 286s haven't been able to keep up. Park says, Excel isn't much better on a 386. Megerdichian says,

Of course the scope of analytical capabilities required depends on the user base, which generally falls into one of three levels. At the low end, users rely on spreadsheets to store addresses and phone numbers. On the high end, power users adopt spreadsheets to handle complex scientific functions. Everyone else falls in the middle, says Kirsten Larson,

a product manager at Microsoft.

And unless you're a power user, chances are "you're barely tapping the features of your spreadsheet," says Dan Altman, an independent consultant in Santa Clara, Calif. Today, even users who crunch numbers that fall 10 places after the decimal point can get reliable results from a spreadsheet, Larson says.

Equal ability

Regardless of user level, the three leading spreadsheets, Excel, 1-2-3 and Quattro Pro from WordPerfect, the Novell, Inc. Applications Group, "are fairly comparable in capability," Fukuda says. Even so, Excel is the leader in sales. "That has a lot to do with marketing and promotion. Plus, users are buying [software] suites because of the value," he adds.

Some IS managers say they aren't concerned about choosing a single software

■ DO YOUR USERS NEED FAST DATA ACCESS AND ANALYSIS? CHECK OUT THE LATEST DECISION-SUPPORT AND EXECUTIVE INFORMATION SYSTEMS TOOLS, SEE CW GUIDE TO BUSINESS INTELLIGENCE SOFTWARE, PAGE 69.

These analytical veterans still fill much of users' number-crunching needs.

solution. Instead, they say they'd be happy to get their companies to agree on just one spreadsheet.

"I have four different spreadsheet [packages] installed on my machine," says David Bumpus, a PC analyst for Bell County in Belton, Texas. It's Bumpus' job to field the county office's 230 spreadsheet users' questions regarding each package. "I would love to get our usage down to one or two packages," Bumpus says. While his boss prefers Quattro Pro, Bumpus says he would like to standardize on 1-2-3. "It's an ongoing battle."

That's the bottom line when it comes to spreadsheets. "Spreadsheet users resist moving to another vendor — let alone another tool — unless they absolutely have to," says Kelly Conasser, an independent consultant in Kenner, La. ■

Hart is a free-lance writer in Sunnyvale, Calif.

Ups 'n' downs

The leading spreadsheets may be comparable feature by feature, but sales of Windows-based products have taken a toll on DOS counterparts

Spreadsheet revenue by operating system*

	1993	1994**
Windows	\$570M	\$540M
DOS	\$254M	\$140M
Macintosh	\$70M	\$47.1M
Other	\$68M	\$65.5M

*Does not include sales of software suites
**Estimated
Source: Datapoint, Inc., San Jose, Calif.

Networking Management

WHEN A WARM BOOT DOESN'T WORK... THERE'S ALWAYS THIS IPS-110

• Remote power cycle 1 to 1,024 devices from single line
• User ID/Password Security with device database
• User programmable power sequencing
• Dual-Block individual power on, reset, UPS on/off
• VT100 Emulation,200 Boot built-in modem
• Internal battery backup
• Current verification on each device
• 30 Day Money Back Guarantee, One Year Warranty

FOR A PERSONALLY GUIDED DEMO CALL:
1-800-776-4346

LodeStar Technologies Inc.

Network Management Tools

FILEAUDITOR TELLS ALL!

WHO GOT INTO WHAT FILES, WHEN?

FileAuditor enhances your network security by...

- ▲ Tracking file and directory activity on the network.
- ▲ Having proactive network security with NLM/MSI or NJ/MSI
- ▲ Denying access to specific files.
- ▲ Generating custom reports.

If you need enhanced network security Call: **1-800-333-2698**

FAX: (602) 545-0008
Kroll Systems, 375 E. Elliot Rd., #10 Chevrolet, AZ 85223
A Division of Tengram Enterprise Solutions

NEW!**SPECIAL OFFER**

Affordable color! Our most popular product just got even better. Better wall-sized true-color projection at the same unbeatable price. The BOXLIGHT ColorShow 1200 is our best seller for a good reason... value!

BOXLIGHT 1200. \$2,299

- ◆ 24,389 vibrant colors!
- ◆ Universal PC and Mac compatibility
- ◆ Compact, portable design
- ◆ FREE remote control and cables
- ◆ Brightest color at any price
- ◆ Now with faster mouse response!

BOXLIGHT 2100. \$6,299

All-in-one! Convenience is the key with the new BOXLIGHT ProColor 2100 integrated LCD projector. Outstanding brightness without the need for an overhead projector. Built-in video AND audio for true multimedia. Automatic dual-lamp changer means the show always goes on. A high-performance solution at a tremendous introductory price.

**INTRO...
PRICE****BOXLIGHT: Your direct source
for all the bright answers.**

- ◆ More than 50 models in stock
- ◆ Instant availability
- ◆ Overnight shipping
- ◆ 30-day guarantee and extended warranties
- ◆ Expert technical support

**Three for the show.****MULTIMEDIA
READY**

Price Performance! Over 600,000 colors and built-in audio make your presentations and meetings come alive with wall-sized video and room-filling sound. Super-fast response times, VESA Local bus video compatible. Need we say more?

BOXLIGHT 1500. \$3,799

- ◆ 16 million colors; 600K simultaneously
- ◆ Built-in audio amp & speaker
- ◆ Rugged, lightweight metal case
- ◆ Projects from PC, Mac or VCR
- ◆ Model 1300 without video/audio - \$2,999!

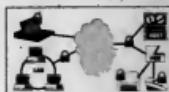
How to connect

**3270 SNA
Emulation
Software for
Windows™**
Access IBM mainframe applications
from your PC.
• 3270 and Telnet 3270 clients for Windows 3.1
• File transfer and print
• Point & click programming
• 100% Winsock-compliant
• Graphical keyboard mapper
• Allows interactive query of applications like
TSO, CICS, IMS, and NetView

CALL 1-800 BRIXTON
CDI Division Services, Inc.

Mainframe Connectivity**Network Security & Wireless Bridges****Cylink has the world locked up.**

You can secure your information globally. You just need the right security partner. Only Cylink has spent the last ten years building a support organization in over 80 countries—working successfully with local governments, customs, and communications infrastructures. We can secure everything from applications on a laptop to global wide-area networks, from telephones to high-speed data links. We secure information for most of the world's money center banks, Fortune 500 companies, and government, police, and military organizations. Because of our experience, it's easier than you think to keep your information safe. Cylink Corporation, 910 Hermosa Court, Sunnyvale, California, USA, 94086. Telephone: 408-715-5800. FAX: 408-720-8294. Toll-free (USA): 800-833-3958. Worldwide sales & support. FAX INFO: 800-833-9137 ext. 63.

Regulatory Data: U.S. Telephone: 408-715-5800. FAX: 408-720-8294. Toll-free (USA): 800-833-3958. Worldwide sales & support. © 1994 Cylink Corporation. Cylink is a registered trademark of Cylink Corporation.
**CYLINK**

Hardware - Buy / Sell / Lease

Buy / Sell / Lease

Dempsey: Where IBM® Quality is Second Nature!

- AS/400
- INDUSTRIAL PC
- RS/6000
- SYSTEM/36
- SERIES/1
- 9370
- ES/9000
- PS/2 & VP

Dempsey
BUSINESS SYSTEMS

18277 Beach Blvd., Suite 200 • Huntington Beach, CA 92648
(714) 847-8488 • FAX (714) 847-3149

(800) 888-2000

Sales & Rentals
 • Processors
 • Peripherals
 • Upgrades
 For preselected equipment, flexible financing, configuration planning, technical support and overnight shipping call.



Large Systems Computers & Peripherals



• ES/9000

• SERIES/1

• AS/400

• RS/6000

• SYSTEM/88

• Point Of Sale

...and more!

New & Used

• Computers

• Peripherals

• Upgrades

Buy • Sell • Rent • Lease

amdaHL

Cisco

Concurrent

Data General

DEC

Hitachi

HP Hewlett-Packard

Memorex

Telex

Prime

Silicon

Graphics

UNISYS

Siemens

TANDEM

Texas Instruments

UNISYS

XEROX

SPECTRA
(800) 745-1233

(714) 970-7000 • (714) 970-7085 Fax

Anaheim Corporate Center
5101 E. La Palma Ave., Second Floor
Anaheim, CA 92807

File Server Concentration

The ultimate ways to protect your nerve center.

The APEX DensePlus

Maximize space, minimize hassle. More floor space, less hardware clutter with modular design that towers over anything else available.

Protect vital equipment. Keep sensitive components performing at their best and avoid unplanned downtime.

Instantly access equipment for efficient servicing. Install components or repair hardware by simply extending drawers or shelves.

We're available to consult with you on your CAD drawings to tailor the perfect cabinet system for your computing environment.

Innovation & Technology by Design



Made in U.S.A.

For more information call: 1-800-861-5866

4580 150th Avenue NE • Redmond, WA 98052 • Fax: 206-861-5757

Buy / Sell / Lease

IBM Systems • Peripherals • Parts & Service

► RISC System/6000

Workstations

Parts & Features

AS/400+

Novell Networking

Sun & Dec

Personal Computers

Data Communications

UPS Systems

Peripherals & Upgrades

System 36 Conversion

AutoCAD

NEW & USED IN STOCK

Computer Components
In Stock • Stockless
Customer for R&B

Authorized Distributors

for Seagate • Xerox

Kingston • Cal Comp

Motorola • UDS Corp

Decision Data Products

8 Nationwide Locations

A Publicly Traded Company
NASDAQ: MKPL

Computer Marketplace
prides itself on being
your one-call computer
hardware solution

**COMPUTER
MARKETPLACE**



800-858-1144

TEL (909) 735-2102 • FAX (909) 735-5777

1490 Railroad Street • Corona, CA 91720

Interlogix

CBE

Buy / Sell / Lease - Services - Classified

Outsourcing

If Outsourcing is your objective...

You can maximize your information technology investment by outsourcing part - or all - of your IS operation. Whether it's a transitional or long-term total services partnership, American Software's the right place to rightsize.

Even software developers enjoy the cost and time-saving benefits of outsourcing with us. Call today and we'll tell you why.



*The Outsourcing Group

A Unit of American Software USA
470 E. Paces Ferry Road
Atlanta, GA 30305
404-264-5770

Buy / Sell / Lease

When Stellar Performance Counts

Star 1990, Star has offered immediate availability on new and refurbished IBM equipment at prices that aren't out of this world. Call us and we will show you why we are...

The Brightest Star in the Midrange Industry

- ★ AS/400 Systems
- ★ System/36 Features
- ★ AS/400 DASD
- ★ AS/400 Systems
- ★ AS/400 Features
- ★ System/36 Systems
- ★ System/36 Features
- ★ IBM 3270 Terminals
- ★ IBM 3270 Printers
- ★ IBM 3270 Modem
- ★ IBM 3270 Printers
- ★ IBM Parallel Printers
- ★ IBM Parallel Modems

1-800-548-5421 ext 730



STAR DATA SYSTEMS

800 from Room #8-Austin, TX 78216

TEL: (210) 341-8114 FAX: (210) 341-9754

Training

Business at the Boxes of the Information Superhighway

January 13-15, 1995 San Francisco Airport Hotel

- The challenges and opportunities of conducting commerce on the information superhighway
- How to find the right partners
- Presentations by top executives from AT&T, BellSouth, Comshare, Circuit City, Comshare, Dell, GTE, IBM, Microsoft, Novell, Oracle, and Sun
- The Emerging Electronic Marketplace
- Network Enabled Business Reengineering
- Interfacing the Internet with the Information Highway: Global Information Infrastructure and Worldwide Business

For more information contact:

Phone: (415) 643-5170 Fax: (415) 643-2826

E-mail: info@comshare.com

WWW Home Page: <http://www.comshare.com>

Group discounts available for groups of 10 or more. Minimum 100 required.

CITM

Warren A. Levee School of Business, University of California, Berkeley

Business Opportunities

MARKETING ALLIANCE

Leading informational data center automation software developer seeks software vendor to market and distribute the first multi-platform, automated client/server production management system. 919-460-9670 fax 919-460-9795.

Sierra, Inc.
Cary, North Carolina



Get Instant Access to - Computerworld Introducing . . . CW Online

Computerworld introduces CW Online, a comprehensive, fully searchable library of Computerworld articles. With CW Online, you can search the three most recent years of Computerworld issues. And the service is updated weekly, so you can access new information every week. Research has never been so easy, so complete or so economical. Right from your personal computer.

The Online start-up kit costs just \$25.00 and includes everything you need to start using CW Online including easy-to-use communications software. After that, you'll be charged for access time along with a \$5.00 monthly account service fee. You can even set your account up for us to bill your credit card or invoice your company on a monthly basis.

Call today to enter your subscription to CW Online and receive your CW Online start-up kit with valuable communication software.

Electronic access to a library of Computerworld articles

For more information or to order call
800-343-6474 x81-493 today.

Bids / Proposals

MS CENTRAL DATA PROCESSING AUTHORITY

Sealed proposals will be received by COPA, 301 N Lamar St., 3rd Fl., Suite 546, Jackson, MS 39202 until the date and time specified below.

General RFP 2873 due Tues 1/24/95 at 3:30 p.m. This is a General RFP to be used through January 1996 for routine components and hardware and software for existing mainframe environments systems for the State of Mississippi. No charge.

General RFP 2874 due Tues 1/24/95 at 3:30 p.m. This is a General RFP to be used through January 1996 for routine components and hardware and software for existing mainframe environments systems for the State of Mississippi. No charge.

General RFP 2875 due Tues 1/24/95 at 3:30 p.m. This is a General RFP to be used through January 1996 for specialized adaptive environments/hardware for existing mainframe environments systems for the State of Mississippi. No charge.

Vendors may request RFP's with no charge by calling COPA at (662) 324-0100 or (800) 329-2664. COPA reserves the right to reject any RFP's and to waive information.

NEW YORK CITY TRANSIT AUTHORITY REQUEST FOR PROPOSALS

SYNOPSIS: Contractor to Provide Informational, Technical, Operational, and Programmatic Services to the New York City Transit Authority (the "Authority"). The Authority is a public transportation organization under the Public Authorities Law of the State of New York, which for purposes of this RFP is referred to as "the Authority". The Authority is responsible for the Manhattan and Bronx Surface Transit Operating Authority and SIRTA, which are separate entities. The Authority will consider the following pre-proposal conference requests. Requests are listed in relative order of importance. An answer, correspondence, proposals and other information will be provided to the Authority by this RFP, including any information requested to assess the environmental impact of the proposed project.

All General Technical Qualification, Risk Analysis, and Cost Estimating Services due January 14, 1995 at 1:00 p.m. EST. A pre-proposal conference will be held on January 6, 1995 at 1:00 p.m. EST at 100 University St., 9th Fl., Seattle, WA 98101. All interested parties should contact the Project Contract Manager at (206) 684-8800 if they plan to attend.

Informational, Technical, Operational, and Programmatic Services due January 27, 1995. Bid documents shall be accepted. The New York City Transit Authority, 100 Livingston Street - Room #202, Brooklyn, NY 11201. Proposals must be submitted in sealed packages and will not be inspected. In the event of a tie bid, the lower bid rate, regardless of cost, will prevail. The bid document specifies the terms and conditions of award. A full description of these and other provisions are included in the proposal documents.

What Differentiates

COMPUTERWORLD...

The Only Newspaper in the IS Category - "The Newspaper of Information Systems Management"

The Only Paid Subscriber Base (100%, ABC Audited 140,313) in the IS Category.

The Only ABC-verified Total Audience Figure (505,423), and the Only Audited Renewal rate (61%) in the IS Category.

Companies in this issue

Page number refers to page on which story begins

A	O. Smith Automotive Products, Inc.	24	Conshare, Inc.	72,76	JBL International, Inc.	62	Richardson Electronics Ltd.	14
Albert Heijn Group	1	Congress Research Corp.	50	Biosoft Corp.	85	Ridgeback Services	33	
Acer America Corp.	4	Corporate Communications, Inc.	33	Bluebeam, Inc.	38	Robertson Stephens & Co.	49	
Adex, Inc.	53	CSC ComputerSource	39	Rensselaer Institute of Technology	4	RuckusWireless International Corp.	39,50	
Advanced Computer Communications	53	D		Kidder Peabody & Co.	33	Rex Systems, Inc.	1,14	
Aggregate Computing	57	Data General Corp.	29,45	Lambda Electronics, Inc.	14	RSA Data Security, Inc.	50	
Alcatel Alsthom AT&T, Inc.	72	Datapoint Information Services Group	76	Launder & Associates Ltd.	36	RSA Data Security, Inc.	50	
Alley, Inc.	62	Datapoint, Inc.	10,24,56,59	Lead Technologies, Inc.	62	Sakem Brothers, Inc.	14	
Amgen Corp.	1	DEC Computer Corp.	4	Legato Systems, Inc.	6	San Francisco Canyon Co.	6,16	
America Online, Inc.	50	DEG Infostystems, Inc.	34	Leviton Industries, Inc.	14	SAP America, Inc.	1,14	
American Express Co.	33	Digital Equipment Corporation	4,6,8,12,45,57,59	LightSpeed International	33	Scientific Applications International Corp.	12	
Amstrad, Inc.	76	Discrete	2	Lindahl Cedar Homes, Inc.	46	Scientific Atlanta, Inc.	26	
Andrew Corp.	56	Distributed Technologies Corp.	8	Lotus Development Corp.	8,12,16	Sceptre Computer Systems, Inc.	10,58	
Andrew Davidson & Co.	38	Du-Broadstreet Software	14	Lotus Development Corp.	45,61,94	Silicon Graphics, Inc.	6,8,32	
Apple Computer, Inc.	8,16,34,38,48,49	E		Magnus Corp.	41	Software AG of North America, Inc.	14	
Arbor Software, Inc.	72	E Systems Co.	58	Massachusetts Electric Industrial Co.	95	Software Corp. of America	1	
Arco Software, Inc.	51	Eastman Kodak Co.	81	MCI Communications Corp.	61,63	Software Publishing Corp.	61	
Arris Group, Inc.	94	Electronic Frontier Foundation	6	Merrill Lynch & Co.	29	Sprint Corp.	63	
Austin-Tile Corp.	1	EMC Corp.	1	Merrill Lynch & Co.	29	Starline	50	
The ASK Group, Inc.	33	EM2 Enterprise	50	Mita Corp., Inc.	1,14,16,43	Syntel, Inc.	59	
AST Research, Inc.	4	Enterprise Services, Inc.	8	Mitsubishi Computer Systems, Inc.	53	SQI Financial, Inc.	14	
Atlanta Journal-Constitution	4	Enterprise Integration	50	Mitsubishi, Inc.	50	STB Systems, Inc.	51	
AT&T V Corp.	63	Technology Corp.	50	Mitsubishi Corp.	1,4,6,8,12,16,29,39	Starline Technology, Inc.	57	
AT&T Global Information Solutions	6	Enterprise Rent-A-Car	39	Mitsutech International, Inc.	41	Suburban Propane Corp.	1,14	
AT&T Professional	6	Evergreen Systems, Inc.	47	Mitsubishi Electronics America, Inc.	39	Sun Microsystems, Inc.	8,12,52	
Development Center	83	Executive	44	Mitsubishi, Inc.	39,45,63	Superbyte, Inc.	91	
Autodesk, Inc.	61	Fujitsu Ltd.	85	Mustang Software, Inc.	53	Sybase, Inc.	1,6,11,61,62	
Avaya Software, Inc.	44	F		N	Symantec Corp.	8,49		
Avira, Inc.	24,29	FoxNet, Inc.	45	Nantucket Corp.	61	Syntel, Inc.	47	
G		Florida Power Corp.	57	National Education Training Group	55	Tandem Computers, Inc.	59	
Florida Dept. of Education	10	Fluor Daniel Co.	1	National Westminster Bank	39	Telecommunications International	77	
Blockbuster Entertainment Corp.	10	Food Service Research, Inc.	14,46,61	National Telephone Technologies	39	Telextron Technologies	41	
Birdsoft Software, Inc.	62	Galaxy International	1,57	NEC Corp.	35,45	Telemex de Mexico	63	
BMC Software, Inc.	50	Gartner Group, Inc.	1	NetScalr	62	Teleglobe Corp.	1	
Boeing Commercial Airplane Group	10	Gates Research Institute	1,14	Network Management of Forum	49	Teradata Corp.	50	
Boeing Computer Services	10	GATX Logistics de Mexico	63,64	Newport Power & Light	12	Teris Systems, Inc.	50	
Boeing Electronics, Inc.	32	General Accident & Assurance of America, Inc.	1	Nextel Communications	10	The Home Corp.	10	
Bosch & Haiges, Inc.	16	General Motors Corp.	1	Nextel Networks, Inc.	3	The Hertz Corp.	20	
Bordertown International, Inc.	1,81	Georgia Power Co.	1	Nintendo Co.	66	The Standard Group International, Inc.	56	
Boston Edison Co.	46	Genesys Storage Systems	58	Northeast Consulting Resources, Inc.	49	The Yankee Group.	33	
Brook Technologies, Inc.	47	GTE Corp.	63	Northwest Germanaus Corp.	1	The Zee Catalogues	61	
Brown Technologies	39	H		Novell, Inc.	10,33,45,46,47,49,51,53,54	Thin Skyte Projections, Inc.	24	
Budget Rent A Car	39	HawkNet, Inc.	47	NTT Corp.	45	Triadic Corp.	76	
Burton Group	16	Hayes Microcomputer Products, Inc.	56	I		U		
Business Objects, Inc.	72	Health Sciences Center	59	On Demand Software & Services, Inc.	8,47	U3 Networks, Inc.	39	
Business Research Group	61	Heystek Systems, Inc.	59	One Up Corp.	4,12	UBS Securities, Inc.	1	
C		Howard-Packard Co.	1,10,12,14,20,24,26,28,30,32,34,36,38,41,57,58	Orca Corp.	6,10,12,25,33,41,56,61	Unisys Corp.	5,39	
Cabletron Systems, Inc.	33	IBM	1,4,8,12,14,20,24,26,28,30,32,34,36,38,41,57,58,59,61,62,77	Orlando Health Care Group	49	University of Minnesota	12	
California Federal Banc.	94	IBM Central Railroad	1,14	Pacific Communications Sciences, Inc.	1	University of Pennsylvania	6	
Cap Gemini	6	Hitachi Data Systems Corp.	1	PacifiCorp	41	U.S. Bank, Inc.	30	
Caroline, Inc.	65	Hewlett-Packard Co.	45,49	Palcom Corp.	41	USA West, Inc.	29	
CEM Corp.	24	Hewlett-Packard Co.	45,49	Philips Laser Magnetic Storage	41	USA CityLink	4	
Chapman and Katter	46	Hilti Corp.	61	Plaid Software, Inc.	72,76	Virtue Software Corp.	68	
Chevron Information Technology Co.	1	Honeywell	61	Plascon Hardin, Kipp & Brach	61	Viacom, Inc.	68	
Chrysler Software, Inc.	16	Information Builders, Inc.	50,76	Platinum Computing Corp.	57	Viking Components	41	
Choice Hotels International, Inc.	58	Information Resources, Inc.	69,72	PointCom Corp.	5	VMark Software, Inc.	45	
Cisco Systems, Inc.	1	Informix Software, Inc.	61	Print & Whately	1,6,8,11,82,77	WordPerfect	94	
Cincinnati Microwave, Inc.	1	Intelsat Solutions, Inc.	40	Piranha Research	63	ZetaNet USA Corp.	39	
Cisco-Systems, Inc.	33	Intel Corp.	4,8,16,49	Pyramid Technology Corp.	10,56			
Cliecorp	4	Intelligent Office Co.	28	Radstone Technology Corp.	53			
Clark Development Co.	56	International Data Corp.	1,89,97,98,172	Red Brick Systems	59			
Coldstar, Inc.	46	Internet Access, Inc.	1	Regency Systems Solutions	10			
Compaq, Inc.	56,76	J						
Compaq-Palmwise Co.	1,14	Kaplan, J.						
Compaq Computer Corp.	1,28,33,41	K						
Computer Services, Inc.	50	Kaplan & Associates	28					
Computer Sciences International, Inc.	33,61,82							
Computer Concepts Corp.	61							
Computer Peripherals, Inc.	41							
Computer Sciences Corp.	20							

Gainers**Losers****Percent**

Stocks
Am-Biosystems
Amgen
Ameritech Corp.
Ameristar Corp.
Ameristar Corp., Class A
Ameristar Corp., Class C
Ameristar Corp., Class D
Ameristar Corp., Class E
Ameristar Corp., Class F
Ameristar Corp., Class G
Ameristar Corp., Class H
Ameristar Corp., Class I
Ameristar Corp., Class J
Ameristar Corp., Class K
Ameristar Corp., Class L
Ameristar Corp., Class M
Ameristar Corp., Class N
Ameristar Corp., Class O
Ameristar Corp., Class P
Ameristar Corp., Class Q
Ameristar Corp., Class R
Ameristar Corp., Class S
Ameristar Corp., Class T
Ameristar Corp., Class U
Ameristar Corp., Class V
Ameristar Corp., Class W
Ameristar Corp., Class X
Ameristar Corp., Class Y
Ameristar Corp., Class Z
Dollar
BMC Software Inc.
FDR Software Inc.
GTE Corp.
IBM Corp.
TCL Comm.
Websys Inc.

4000-Dollar
Cirrus Logic
Compaq International
Dell Computer Corp.
TCL Comm.
Websys Inc.

1000-Dollar
IBM Corp.
TCL Comm.

500-Dollar
IBM Corp.
TCL Comm.

250-Dollar
IBM Corp.

100-Dollar
IBM Corp.

50-Dollar
IBM Corp.

25-Dollar
IBM Corp.

10-Dollar
IBM Corp.

5-Dollar
IBM Corp.

2-Dollar
IBM Corp.

1-Dollar
IBM Corp.

50-Cent
IBM Corp.

25-Cent
IBM Corp.

12-Cent
IBM Corp.

6-Cent
IBM Corp.

3-Cent
IBM Corp.

1.5-Cent
IBM Corp.

.75-Cent
IBM Corp.

.375-Cent
IBM Corp.

.1875-Cent
IBM Corp.

.09375-Cent
IBM Corp.

.046875-Cent
IBM Corp.

.0234375-Cent
IBM Corp.

.01171875-Cent
IBM Corp.

.005859375-Cent
IBM Corp.

.0029296875-Cent
IBM Corp.

.00146478125-Cent
IBM Corp.

.00073239375-Cent
IBM Corp.

.000366196875-Cent
IBM Corp.

.0001830984375-Cent
IBM Corp.

.00009154921875-Cent
IBM Corp.

.000045774609375-Cent
IBM Corp.

.0000228873046875-Cent
IBM Corp.

.00001144365234375-Cent
IBM Corp.

.000005721826171875-Cent
IBM Corp.

.0000028609130859375-Cent
IBM Corp.

.00000143045654296875-Cent
IBM Corp.

.000000715228271484375-Cent
IBM Corp.

.0000003576114357421875-Cent
IBM Corp.

.0000001788057178709375-Cent
IBM Corp.

.00000008940285893546875-Cent
IBM Corp.

.000000044701429467734375-Cent
IBM Corp.

.0000000223507147338671875-Cent
IBM Corp.

.000000011175357366934375-Cent
IBM Corp.

.00000005587678683396875-Cent
IBM Corp.

.000000027938393419934375-Cent
IBM Corp.

.0000000139691967097671875-Cent
IBM Corp.

.000000069845983548834375-Cent
IBM Corp.

.000000034922991774417875-Cent
IBM Corp.

.0000000174614958872089375-Cent
IBM Corp.

.0000000873074794459044375-Cent
IBM Corp.

.00000004365373972295221875-Cent
IBM Corp.

.0000000218268698637611875-Cent
IBM Corp.

.00000001091341993188559375-Cent
IBM Corp.

.000000054567099769447875-Cent
IBM Corp.

.000000027283549834743875-Cent
IBM Corp.

.0000000136417749198719375-Cent
IBM Corp.

.0000000682088749594594375-Cent
IBM Corp.

.00000003410443747722971875-Cent
IBM Corp.

.000000017052218738649375-Cent
IBM Corp.

.000000085261094391826875-Cent
IBM Corp.

.0000000426305471959134375-Cent
IBM Corp.

.00000002131527359795721875-Cent
IBM Corp.

.0000000106576867989861875-Cent
IBM Corp.

.0000000532883434949309375-Cent
IBM Corp.

.0000000266441717474654875-Cent
IBM Corp.

.00000001332208587373271875-Cent
IBM Corp.

.00000006661042943686359375-Cent
IBM Corp.

.0000000333052147184317875-Cent
IBM Corp.

.00000001665260735821589375-Cent
IBM Corp.

.0000000832630036901094375-Cent
IBM Corp.

.00000004163100184505471875-Cent
IBM Corp.

.0000000208150009225273875-Cent
IBM Corp.

.00000001040750046126369375-Cent
IBM Corp.

.000000052037500230631875-Cent
IBM Corp.

.0000000260187501153194375-Cent
IBM Corp.

.00000001300937505765971875-Cent
IBM Corp.

.0000000650468750288294375-Cent
IBM Corp.

.00000003252343750144471875-Cent
IBM Corp.

.0000000162617187507223875-Cent
IBM Corp.

.0000000813085937503611875-Cent
IBM Corp.

.00000004065439375018059375-Cent
IBM Corp.

.00000002032719375009031875-Cent
IBM Corp.

.00000001016359375004515875-Cent
IBM Corp.

.00000005081796875002279375-Cent
IBM Corp.

.00000002540898437501144875-Cent
IBM Corp.

.000000012704492375005724375-Cent
IBM Corp.

.000000063522461875002862375-Cent
IBM Corp.

.000000031761230937501431875-Cent
IBM Corp.

.000000015880655437500715875-Cent
IBM Corp.

.00000007940327743750035875-Cent
IBM Corp.

.00000003970163875001789375-Cent
IBM Corp.

.000000019850819375000897375-Cent
IBM Corp.

.00000009925040937500044875-Cent
IBM Corp.

.000000049625204375000224375-Cent
IBM Corp.

.000000024812602375000112375-Cent
IBM Corp.

.000000012406301375000056375-Cent
IBM Corp.

.0000000620315003750000281875-Cent
IBM Corp.

.00000003101575037500001409375-Cent
IBM Corp.

.00000001550785037500000604375-Cent
IBM Corp.

.00000007753925037500000302375-Cent
IBM Corp.

.000000038769650375000001511875-Cent
IBM Corp.

.000000019384850375000000755875-Cent
IBM Corp.

.0000000969242503750000003779375-Cent
IBM Corp.

.0000000484621503750000001889375-Cent
IBM Corp.

.0000000242310503750000000944375-Cent
IBM Corp.

.0000000121155503750000000472375-Cent
IBM Corp.

.00000006057775037500000002361875-Cent
IBM Corp.

.000000030288850375000000011809375-Cent
IBM Corp.

.000000015144450375000000005904375-Cent
IBM Corp.

.000000075722250375000000002952375-Cent
IBM Corp.

.000000037861150375000000001476375-Cent
IBM Corp.

.000000018930550375000000000738375-Cent
IBM Corp.

.000000094652750375000000000369375-Cent
IBM Corp.

.0000000473263503750000000001849375-Cent
IBM Corp.

.0000000236631503750000000000924375-Cent
IBM Corp.

.0000000118315503750000000000462375-Cent
IBM Corp.

.0000000591577503750000000000231375-Cent
IBM Corp.

.00000002957885037500000000001156375-Cent
IBM Corp.

.00000001478945037500000000000578375-Cent
IBM Corp.

.00000007394725037500000000000289375-Cent
IBM Corp.

.00000003697365037500000000001349375-Cent
IBM Corp.

.00000001848685037500000000000724375-Cent
IBM Corp.

.00000009243415037500000000000362375-Cent
IBM Corp.

.00000004621705037500000000001812375-Cent
IBM Corp.

.00000002310855037500000000000906375-Cent
IBM Corp.

.00000001155425037500000000000453375-Cent
IBM Corp.

.00000005777115037500000000000226375-Cent
IBM Corp.

.000000028885550375000000000001130375-Cent
IBM Corp.

.000000014445550375000000000000560375-Cent
IBM Corp.

.000000072355750375000000000002800375-Cent
IBM Corp.

.000000036177850375000000000001400375-Cent
IBM Corp.

.000000017988950375000000000000700375-Cent
IBM Corp.

.000000089444950375000000000003400375-Cent
IBM Corp.

.000000044944450375000000000001700375-Cent
IBM Corp.

.000000022472250375000000000000800375-Cent
IBM Corp.

.000000011236150375000000000000300375-Cent
IBM Corp.

.000000056180550375000000000001500375-Cent
IBM Corp.

.000000028090250375000000000000700375-Cent
IBM Corp.

.000000013045150375000000000000300375-Cent
IBM Corp.

.000000065090150375000000000001400375-Cent
IBM Corp.

.000000032545050375000000000000800375-Cent
IBM Corp.

.000000015222550375000000000000300375-Cent
IBM Corp.

.000000076112550375000000000001600375-Cent
IBM Corp.

.000000038056250375000000000000800375-Cent
IBM Corp.

.000000017028150375000000000000300375-Cent
IBM Corp.

.000000085141150375000000000001500375-Cent
IBM Corp.

.000000042520550375000000000000800375-Cent
IBM Corp.

.000000018110250375000000000000300375-Cent
IBM Corp.

.000000075550150375000000000001400375-Cent
IBM Corp.

.000000037725050375000000000000800375-Cent
IBM Corp.

.000000016862150375000000000000300375-Cent
IBM Corp.

.000000084230150375000000000001500375-Cent
IBM Corp.

.000000042110050375000000000000800375-Cent
IBM Corp.

.000000017037050375000000000000300375-Cent
IBM Corp.

.000000075187150375000000000001400375-Cent
IBM Corp.

.000000037593550375000000000000800375-Cent
IBM Corp.

.000000016771250375000000000000300375-Cent
IBM Corp.

.000000074541150375000000000001500375-Cent
IBM Corp.

.000000037270550375000000000000800375-Cent
IBM Corp.

.000000016535250375000000000000300375-Cent
IBM Corp.

.000000073901150375000000000001400375-Cent
IBM Corp.

.000000036950550375000000000000800375-Cent
IBM Corp.

.000000016317250375000000000000300375-Cent
IBM Corp.

.000000073468150375000000000001500375-Cent
IBM Corp.

.000000036728550375000000000000800375-Cent
IBM Corp.

.0000000161053503750000000000

OBJECT WORLD

Objects In The Real World 1995

Reap the rewards of object technology. For your company. And yourself.

Caterpillar Inc. applied object-oriented analysis and design techniques to streamline the steel procurement process. ■ The Palm Beach Medical Examiner's Office took advantage of reusable objects to create a powerful object technology (OT) application—in record time. ■ Canadian Tire used OT to build a true client/server application that improved customer service and increased traffic in retail stores. ■ The fact is, thousands of organizations are already putting object technology to work in manufacturing, financial services, telecommunications, aerospace, defense, retail, transportation, and more. ■ Object World Boston—March 19-23, 1995—is your chance to discover how you can use OT to create distributed applications that improve performance, cut costs, boost profits, and build competitive advantage. ■ So register for Object World Boston today. And increase your chances for success.

Learn from case studies, OT users and expert panelists.

No other OT conference offers you a broader range of subjects or greater technical depth than Object World. You can choose from 15 tutorials and 54 conference sessions. Many are based on actual case studies and feature OT users and experts who'll share their knowledge and experience. Here is a sample of sessions organized into four separate tracks:

OBJECTS IN THE BUSINESS TRACK: Building the Business Case for Object Technology; Planning for Reuse; Strategic Issues in Transition Management; and The OT Dream Team.

TECHNOLOGY OF OBJECTS TRACK: A Case Study in Large Scale OT Development; Managing Complexity; Building Reusable Software Components; Managing OO Projects; Scaling Up from Small to Large; and Object Metrics: Current Practices.

DISTRIBUTED COMPUTING WITH OBJECTS TRACK: Bridging Client/Server and OO Computing; Choosing a CORBA Implementation; Planning for Large Scale DO Environments; and Case Study: Xerox's Migration to Distributed Object Technology.

SOFTWARE DEVELOPERS TRACK: Incorporating CORBA into C++ Applications; Comparison of C++ and Smalltalk for Use with Object Databases; Case Studies: Detecting Software Development Failures and

Recovering; and Patterns and Frameworks: Elements of Reusable OO Software.

Learn from OT industry's movers and shakers!

Pick up valuable tips and techniques from the implementers who've brought OT from the back room into the mainstream and made it the technology of choice for IS departments. Don't miss presentations by Gray Brooks, Peter Coad, Stephen Mellor, Ivar Jacobson, David Taylor, Andrew Topper, and Paul Harman.

Get the inside story at our Bonus Sessions.

Learn the ins and outs of OT during several 45-minute Bonus Sessions including OMG: Building the Object Technology Infrastructure and Industries in Action—covering healthcare, financial services, and telecommunications.

Save \$200 on the full conference program. Register today.

If you sign up for the full conference program by February 17, you'll save \$200. But that's not all. You'll also get a FREE CD, *The World of Objects*, the definitive reference database for OT. Plus, you'll receive a book filled with money-saving coupons you can redeem for products and services—only at Object World.

DON'T MISS THESE EXTREME PRESENTATIONS.



Jim Hopkins, President of Palladio Software, will conduct a panel discussion, "Theory Is Great—But Does It Get The Job Done?" These methodologies will discuss how their peers' methodology addresses the issues related to object models and iterative development.



Steve A. Mills, General Manager of IBM Software Solutions, will explore the topic, "Objects: Not Just For Programmers Anymore." See how objects have become the driving force in the way software is developed, purchased, delivered, and maintained.



David Taylor, Ph.D., President of Enterprise Engine, will discuss "Business Engineering With Object Technology." Find out how companies are using OT to improve productivity and increase profits.

WAKE UP AND SMELL THE OBJECTS • March 19-23, 1995

Sign up for Object World Boston by February 17 and save \$200 on the full conference program. And get a FREE CD, *The World of Objects*—the definitive reference database for OT. It's worth the price of admission!

WHAT YOU RECEIVE WHEN YOU REGISTER:

By Mail: Fill out this coupon and mail it to Object World Boston, P.O. Box 9107, Lexington, MA 01851.

By Phone: Call or toll-free at 800-225-4658 in the U.S. or 306-479-4700.

By Fax: Use our fast fax service. Fax this coupon to 306-473-8237.

Object World offers a no-questions-asked, money-back guarantee on the full conference program, so you have absolutely nothing to lose. Reserve your place—and your \$200 discount—today.



Sponsored and Produced by:

COMPUTERWORLD



To register or for more information, call 800-225-4658.

(Check one only)

Reserve-and-pay obligation—\$200 discount on the full conference program.

Please send me more information about the full conference program and register me for my **FREE Exhibits Pass**.

Register me for my **FREE Exhibits Pass**—a \$50 value.

I'm not ready to register at this time. Please send me more information about:

Attending Exhibiting at Object World Boston.

Please print or type clearly.

Inquiry Code: CW6

Name _____

Title _____

Organization _____

Street _____

City/Town _____ State/Province _____

Zip/Postal Code _____ Country _____

Phone _____ FAX _____

Internet/E-Mail _____

© Object World is a registered trademark. No use under 18 admitted.



UPD
ATE
No 2



Storage prices

CONTINUED FROM PAGE 1

demand arrays of inexpensive disks. Level 5 capabilities now offered by IBM and Storage Technology Corp. IBM and StorageTek also plan to roll out follow-on RAID products at that time, according to industry observers.

Mainframe disk prices are dropping "like a stone," said Thomas Loane, vice president of computers and communications services at Alamo Rent A Car, Inc. in Fort Lauderdale, Fla. "The wars have been declared, and it's definitely a buyer's market already."

IBM's RAMAC RAID array was expected to sell for up to \$4,50 per megabyte when it started shipping this fall, but Loane said Alamo paid "in the \$8-and-change range." That is "significantly cheaper" than what conventional non-RAID devices cost him a year ago, he said.

More and more reasonable

Galileo International, an on-line reservation consortium in Englewood, Colo., is getting vendor bids of about \$8.75 per megabyte from IBM and EMC for standard array configurations for an upcoming order, said Paul Quade, director of capital planning and resource management.

"When you get down to that level, it starts to be pretty cost-effective," Quade said, adding that those bids would probably have been in the \$4-per-megabyte range as recently as August. He noted that Galileo's heavy transaction-processing workload requires it to buy additional memory plus IBM Econ I/O capabilities, which add another \$1 per megabyte to the price.

Other users are also watching with relish as storage costs go down. "It's gotten to be just a cutthroat, bloody market," said John Marshall, team leader for capacity planning and direct-access storage device (DASD) at General Accident Insurance of America in Philadelphia.

Good for users

Fortunately for users, the price war comes at a time when demand is trending sharply upward. Thanks in part to the resurgence in mainframe buying, total DASD shipments are expected to increase 25% to 900T bytes this year and then rise another 35% to 1.200T bytes in 1995, according to Meta Group, Inc. in Stamford, Conn.

Normally, that kind of demand would help vendors hold the line on prices, but Carl Groton, an analyst at Meta Group, said supplies of arrays have been abundant in the past few months as IBM, EMC and other companies shipped new products and increased the intensity of their market share fight.

"Price manufacturers are in a cost battle here, and they need to be sure they can compete on cost," he said. "It's commodity stuff now."

Things are expected to get even better for users in the next few months, when all five of the vendors slugging it out in the mainstream DASD market have RAID products in their arsenals. Prices are likely to drop another 30% or more during 1995, said Nick Allen, an analyst at Gardner-Greene, Inc. in Stamford, Conn.

"There's going to be a lot of vendors chasing a small market," Loane noted. Prices are coming down so fast that Alamo has shortened the length of the leases it will sign on DASD products from three to two years. "There's no residual value left after that," he said.

Memory Teles moves its automated tape libraries to networked and Unix environments. See page 52.

Cyber Santa

CONTINUED FROM PAGE 1

has been so heavy that Santa Claus installed a mail server to handle the load, which is being forwarded from more than a dozen Internet sites.

One Santa site on the World-Wide Web went up in late November and was getting 10,000 hits a day last week, including requests for items such as Pentium PCs and Ferraris, said Carol Blaine, coordinator at USA CityLink in Abita Springs, La. "It's mad from older

Yea, kids, there is a cyber-Santa

Although there is of course only one Santa, he has built a fault-tolerant E-mail network by setting up multiple E-mail and World-Wide Web addresses

You can send mail to Santa at:
 santa@cpri.net
 santa@rpi.com
 santa@wne1913.com
 santa@northpole.net
 342-1825@recmail.com
 santa@ovair.com
 santa@north.pole.org

Or go to the North Pole yourself by pointing your browser at:

<http://www.wneesoft.com/citylink>
<http://www.northpole.net>
<http://www.southpole.org>

* For an up-to-the minute list of North Pole addresses, send mail to santa.on.the.net@evelyn.net.



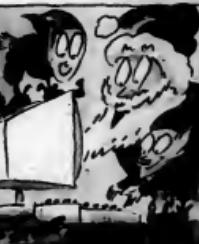
children," she explained.

Deborah Hoevelet, who helped set up Santa's service at santa@recmail.com, said she sees a lot of requests for Barbie dolls and Power Rangers. One two-page, double-column message listed 250 gifts, she said, after checking it twice.

"But you know, a lot of the kids are not asking for anything material," Hoevelet said. "They're asking for heartbreaking things like, 'Help my Dad find a job,' or 'I hope my Dad's business does well because we don't have much money this year,' or 'Help my Grandmother because she's sick,' or 'Can you make peace on Earth?'"

Mary-Ellen Henev, administrator of santa.northpole.net at Internet Access Inc. in Nepean, Ontario, said the company handles 2,000 E-mail messages and 5,000 Web site visits a day from around the world. Almost half are from adults.

One adult, lacking funds to fly his family to Florida for the holidays, asked Santa if he could borrow his sleigh and reindeer for the trip in March. Santa's reply: "Sorry, the sleigh only flies because of Christmas magic, so it



wouldn't work in March."

Most of the E-mail addresses return a canned letter from Santa, but ones sent via MCI Mail are customized for the sender. For example, Santa signed his reply to a message from an airline pilot, "Merry Christmas from the Ultimate Frequent Flyer." And 6-year-old Allison Antunes in Arlington, Va., got a digital pat on the back for her promise to leave Santa, cookies and milk on Christmas eve.

Santa said his Internet connections offer business benefits, such as just-in-time delivery. "E-mail is quick and efficient, so I always stay staffed and should be better able to anticipate the demand for certain gifts and adjust our inventories accordingly," Santa said via his site at WNYT.Newshaper123.com's electronic information service.

CDFP fights crime

CONTINUED FROM PAGE 1

commercial use of CDPF, might also mean less sleep for the unsavory side of society.

"We know that we have a lot of drug dealers coming to our hotels and using 'them' as a safe haven to store drugs," said Thomas Palino, chief of police in Groton, which sits on Interstate 95 between Boston and New York and within easy reach of the Massachusetts-Pennsylvania border. Palino's department is Pequannock's neighbor.

"What we'd like to do [with the technology] that we couldn't do before is have an officer drive through a hotel parking lot at night and run every room to check that there's there and see if he gets any hits," he said.

Palivo said doing such checks under the current system would overburden already-harried dispatchers.

Groton's test could preen the use of public networks by police departments nationwide. A town of 50,000, such as Groton, typically cannot afford the \$800,000 or so it costs to install a private radio network. CDPF installations — with hardware and related software — costs less than \$5,000 per car. For Groton's 16-car police force, that is one-tenth the price of a private radio network.

Network provider Bell Atlantic Mobile Systems, Inc. gave the town a spe-

cial flat rate of \$100 per car for CDPF calls, sources said, as opposed to its regular per-packet pricing. Groton received an \$80,000 grant from the state of Connecticut to pursue the project.

The Groton project may prove easier for new CDPF will be implemented in 1996. It is a specialized application in markets that do not require a national network. The CDPF network may not be deployed nationwide even by the end of 1998 (CW Dec. 12).

Staking out alternatives

While a few police departments use public wireless data networks today, most have expensive private radio networks that they must maintain and upgrade themselves.

"Every police chief out there is going to be looking at this kind of thing," said Alan Burson, editor of *Dispatch*, a magazine in Medford, Ore. Fueling this trend, he said, are the generally lousy private radio network installations. "It's unbelievable how many poor communications systems there are in the U.S.," he said. "Cellular covers places and does things that police and fire radios have had a hard time duplicating."

If Groton's test ends as expected, the town will outfit its 16 cars with Telepac Corp. SI-based systems and CDPF modules from either Cincinnati Microwave, Inc. or Pacific Communications Sciences, Inc., said Anthony Parnasie, Groton's director of MIS.

Eventually, the entire Southeastern

Connecticut Law Enforcement Council could outfit its cars with CDPF, bringing the potential market to 250 cars.

Groton will run the connection server for the area. Based on an Intel Corp. 486-90 MHz Pentium chip, the Connecticut server uses Premier MDT for mobile data terminal middleware from Software Corporation of America.

/Premier acts as a sort of message switch for the system. When an officer sends a message, it is transmitted to a cellular tower, then over landline to the connection server. Premier forwards the message to the town database, Connecticut's Colgate motorvehicle database, which incorporates similar information from across the U.S. and the National Crime Information Center database in Washington. It then assembles the return messages and sends them to the cars, each of which sits on the network as an IP address.

Groton started testing this capability last week. Once it is in place, the second phase will be computer-aided dispatching. A third phase will add an automatic vehicle locator system using Trimble Navigation Systems, Inc.'s Starview fleet management software. If things stay on schedule, the project will be completed by April 1995.

Local drug dealers were not available for comment, but Lance Johnson, managing editor of *The Drug News London*, took the news in stride. "It will make our job a little tougher. When that happens, we'll adjust," he said.



As if we were worried

Women and minorities can now rest assured that they are no more likely than white men to suffer chronic negative effects from using a mouse. The promise of the iconic study, conducted by the Educational Testing Service, was that people in these categories would be more likely to suffer from ergonomic stress because they are generally less exposed to computers. But results showed that they headed over the "more complex requirements for mouse response such as... selecting or scrolling text" with as much skill as people in other categories. Thanks for the reassurance, guys.

Lost in cyberspace?

Does anybody really know how to navigate the Internet? Supposedly, people on the 'net are very helpful if you need some guidance, but it's tough to ask for help if you don't even know how to get on the system. Well, there's a way. MeeklerMedia Corp. has set up a 24-hour helpline for all those poor lost souls who can't make that first connection. And perhaps you won't be surprised to hear the call will cost you—it's a 900 number, 45¢-INTERNET and 95 cents a minute with a 15-minute maximum, for those of you willing to pay the piper. Just another sign that the information highway isn't going to be toll-free.

MEEKLERMEDIA COURTESY OF ERIN LALIKAH; ILLUSTRATION BY DAVID MARSHALL

Techno-threads

Want to be a computer nerd—or look just like one? Now you can dress technogeek from head to toe with a new line of clothes and accessories from Software Etc. Stores. If you believe their motto, then "geek is chic." If you're a real nerd, though, you might not have to buy much to look like this guy after all.



Inside Lines

Help! No, really!

Developers in Borland's Paradox group have increasingly sent SOS electronic mail requesting employment or an acquisition by Novell, according to a Novell source. At first, the Novell recipients thought the messages were in jest. "But the tone did not suggest humor," the source said. While Novell's contract with Borland ensures access to Paradox for Windows for Novell's PerfectOffice suite, a Novell spokeswoman said, the company is not in the data-base business.

Love, not leave

Noting that Borland Chief Operating Officer Keith Maib was out of the office, the Wall Street rumor mill incorrectly deduced that he had resigned. Maib took great exception to the rumor, calling it "bad and dangerous," and said he hadn't resigned and had no plan to do so. He did acknowledge being out of the office for two days last week. "I was celebrating my anniversary with my wife." Who would believe a guy would do that?

Just checking ...

Seems like the Pentium flaw is beginning to bug a lot of unlikely people these days. Last week an Internet user claimed he received a friendly call from the FBI following a post comparing Intel's estimated odds of an error occurring to those of getting shot. "Only happens to a few people, but you don't know in advance if it is going to be you," or so went the post. Apparently, someone read that as a threat to Intel CEO Andrew Grove and sicced the feds on the hapless writer. "I never meant it as a threat, just a comparison," he later wrote in another Internet post. "It was actually cool talking to a real-life FBI special agent, though." Intel claimed ignorance of the affair.

A late Oracle

An Oracle spokeswoman confirmed last week that the company will not release initial graphical user interface (GUI) support for its client/server applications by year's end as promised. The company will instead be late by several months and begin shipping GUI support next spring. The spokeswoman said no explanation for the delay is available.

Lighter than a VAX

Digital is weighing whether to market a 6-pound, 64-bit laptop that can run OpenVMS, Unix and Microsoft's Windows NT. Digital sources said last week, Jesse Lipson, vice president of Digital's OpenVMS Systems group, told members of the Digital Equipment Computer Users Society that the final decision has not been made. Pricing, however, could be steep—\$5,000 or more. "Take a look at a Sun Solaris or an IBM AIX laptop, and that's where it's likely to be," Lipson said. It's a sure way to make the OpenVMS operating system more portable.

Should old acquaintance be forgot...

SAP's effort to patch both mainframes and the AS/400 in fresh client/server boxes is expected to get a boost from old mainframe SAP, which is said by sources to be looking closely at porting its fast-selling R/3 client/server business software to the two IBM platforms. SAP declined to comment on the matter, as did officials at IBM's AS/400 Division. The mainframe folks at IBM acknowledged that they and SAP are "exploring the possibility of working together" on an R/3 port. Industry sources do not expect anything to materialize until late 1996 at the earliest.

Main was apparently the word. Sun Microsystems confirmed last week that it has stopped selling its year-old SPARCcluster I NFS server due to slow sales and improved NFS server performance on standard Sun symmetrical multiprocessing servers. We've heard that Sun is going to split the beans about anything else, so we'll know in our early 3Q-quarter, voice-mail tip line at (800) 880-5055 or our toll-free number at (800) 345-6474. Hence editor Maryann Johnson can be reached by phone at (800) 880-8179, via the Internet at mjohnson@cau.com or through MCI Mail at 580-8017.

How to contact Computerworld editors:

	PHONE:	FAX:
Main office, Framingham, Mass.	(508) 879-0700	(508) 875-8731
24-hour tip line	(508) 820-8555	
Mid-Atlantic bureau, Rochelle Park, N.J.	(201) 587-0095	(201) 732-1606
Washington bureau, Washington	(202) 347-0134	(202) 347-2765
Midwest bureau, Des Plaines, Ill.	(708) 827-4433	(708) 827-9559
West Coast bureau, Burlingame, Calif.	(415) 347-0555	(415) 347-6831
Northwest bureau, Bellevue, Wash.	(206) 641-7770	(206) 747-1021
CF: ELECTRONIC MAIL: Computerworld's writers and editors have individual MCI Mail accounts. Most of our staff members can be reached on MCI Mail by sending messages to their first and last names followed by @mcimail.com. To message the managing editor, for a complete list of editorial MCI Mail addresses, message Linda Gengen at 597-8044.		
CF: Our CompServe account number is 76327,2419. Please use that account only for communications with writers and editors. Computerworld cannot guarantee response to all inquiries. Direct subscription inquiries to CompServe: 73373,1230.		
CF: Letters to the editor and other editorial-related messages can be sent via Internet to letters@compworld.com		
CF: CLIENT/SERVER JOURNAL: Contact Editor Alan Alper at (508) 820-8515 or via Internet at alper@compworld.com		
CF: SUBSCRIPTIONS: Inquiries and changes of address should be sent to P.O. Box 2043, Marion, Ohio 43305-2043 or call (800) 669-1002.		
CF: REPRINTS: Contact Sharon Bryant at (508) 820-8125.		
CF: RAPID REFERENCE CLIPPING SERVICE: (800) 343-6474 x554.		

Client/Server Rapid Applications Development



The tough decisions aren't always made at the top. That's why it's important to empower executives and every other decision maker with the right information...at the right time. And that's also why the SAS® System is redefining the role of applications development, giving you a complete *enterprise information system* that taps directly into your organization's vast information reservoir.

Bring an Enterprise View to Every Desktop—Executive and Otherwise

With the SAS System, you can build custom-tailored applications in far less time, using fewer resources, than it takes to force-fit an off-the-shelf solution into your organization. And because the SAS System has its own built-in strategy for client/server, you can integrate data and applications from different hardware platforms into a single, company-wide information delivery system.

Build applications that incorporate pull-down windows...access to electronic mail...drill down, hotspotting, and exception reporting...and graphical display of critical success factors. Working hand-in-hand with these basics—out of sight but always at the ready—are literally hundreds of powerful, proven tools for virtually every decision support need: financial planning and modeling, corporate reporting, quality improvement, and much more.

Take 30 Days to See, and Decide, for Yourself

Let the SAS System help you reach the right decision about applications development, EIS, and every other issue important to your business. Call us now at 919-677-8200 for a free video preview...plus details about a no-risk software evaluation and upcoming SAS System business briefings.

The SAS System. The World's Leading Information Delivery System.



SAS Institute Inc.

Sales and Marketing Division
SAS Campus Drive • Cary, NC 27583
Phone 919-677-8200 • Fax 919-677-8202
In Canada: Phone 1-800-565-8397

SAS is a registered trademark of SAS Institute Inc.
Copyright © 1991 by SAS Institute Inc.

NOW THERE'S NO EXCUSE FOR NOT WORKING AN 8-HOUR DAY.



(800) 627-8650

MONDAY-FRIDAY 7AM-9PM CT • SATURDAY 10AM-4PM CT • SUNDAY 12PM-5PM CT
KEYCODE #1208 • CANADA CALL 800-387-5735 • MEXICO CITY CALL 800-128-7511

Quote from Laptop Buyers Guide and Handbook, Vol. 12, No. 9 & 26. *Power守在 the U.S. only. Some products and promotions may not be available outside the U.S. Prices and specifications subject to change without notice. **Business hours arranged by Leasing Group, Inc. *Latitude is powered by a NiMH battery, which is capable of replacing the alkaline batteries with a second NiMH battery. For a complete copy of our 3-year Limited Warranty, please write to Dell Computer Corporation, 2714 W. Braker Lane, Building 4, Austin, TX 78758. The Intel Inside logo is a registered trademark and IntelDX2 is a trademark of Intel Corporation. Dell is a trademark or service mark of Dell Computer Corporation. All rights reserved.

HOW DELL GIVES YOU TRUE EIGHT-HOUR BATTERY LIFE[®]

The lithium ion battery in the Dell[®] Latitude[™] XP[™] notebook packs more juice into the same amount of space as older batteries.

The Dell Latitude[™] notebook, our value-priced model, provides up to 8 hours[®] by simultaneously supporting 2 NiMH batteries.^{*}

Our exclusive power management software is designed to dynamically adjust energy consumption.

Dell's engineering expertise combines advanced battery technology with power management software to give you higher performance without sacrificing battery life.

(Actual battery life will vary depending on name and frequency of use and configuration.)

DELL LATITUDE XP
• IntelDX2[™] 50MHz System
(PICTURED SYSTEM)

9" Dual Scan Color Display
8MB RAM (36MB Max RAM)
340MB Hard Drive

New Smart Lithium Ion Battery
3-year Warranty[®]

\$3199

Business Lease*: \$118/Mo.
Order Code #300182

DELL LATITUDE
IntelDX2 50MHz System

9" Dual Scan Color Display
4MB RAM (20MB Max RAM)
200MB Hard Drive

Second NiMH Battery - \$99 more
(Required for extended battery life)

\$2299

Business Lease: \$85/Mo.
Order Code #600022

Well, well, well. Looks like the office laggards of the world have just met their nemesis. In the form of the Dell Latitude and the Latitude XP notebooks and their eight hours of battery life.[®]

So, call today to order your share of these true nine-timers. And for once, experience eight full hours of work.

With absolutely no excuses.



DELL